

# THE ELECTRIC LIGHT AND POWER INDUSTRY 1929

Statistical Bulletin No. 6

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National Electric Light Association

420 Lexington Avenue  
NEW YORK CITY



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## FOREWORD

**T**HE statistics herein contained embrace the operations of enterprises devoted exclusively to the generation and distribution of electricity, plus the electric departments of all others which maintained electric light and power systems jointly with other public utility services. These "composite" companies constitute approximately three-quarters of the total number.

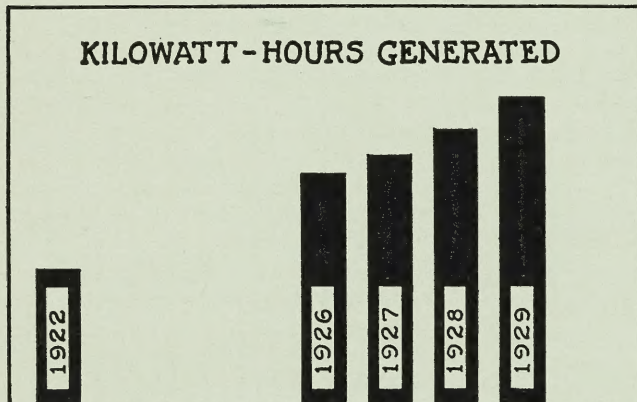
These data were determined from reports received at N. E. L. A. headquarters from some 400 companies, whose operations represented approximately 92 per cent of the entire industry and, together with the published returns of municipal systems and of others filed with various Public Service Commissions, were prorated to cover 100 per cent of the total electric light and power business.



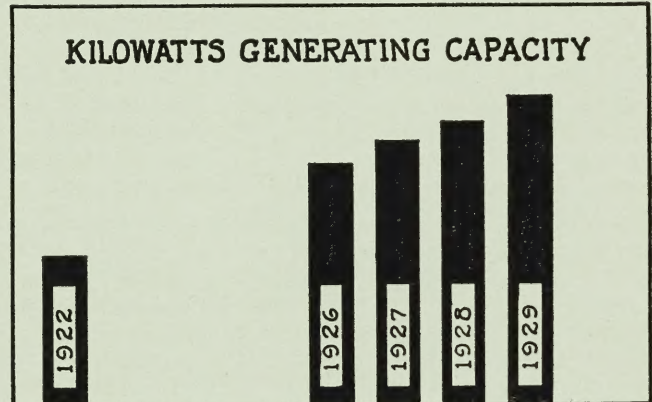
# ELECTRIC LIGHT & POWER INDUSTRY

## (GRAPHIC PRESENTATION OF BASIC DATA)

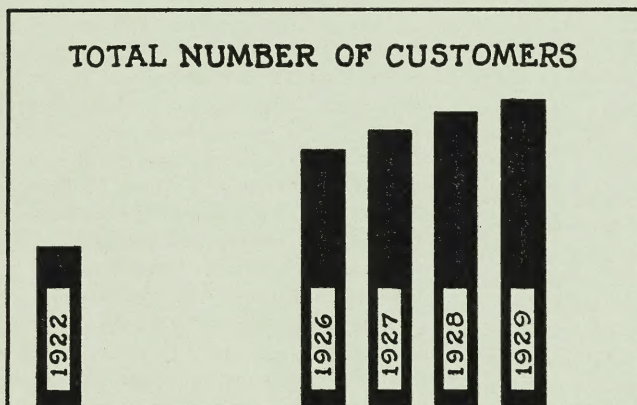
### YEARS 1922-1929



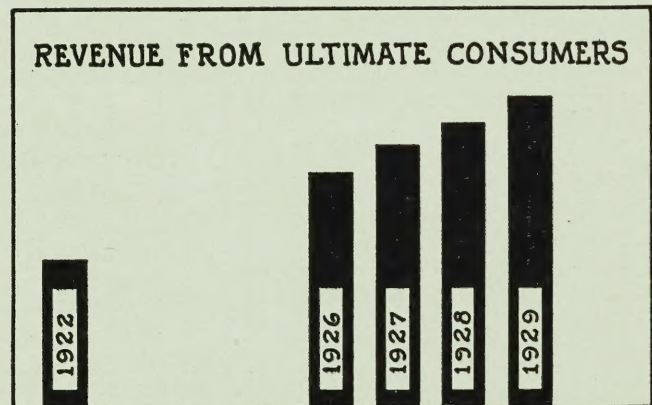
1922 - 40,291,536,000  
 1926 - 67,985,782,000    1928 - 80,453,498,000  
 1927 - 73,210,445,000    1929 - 89,944,428,000



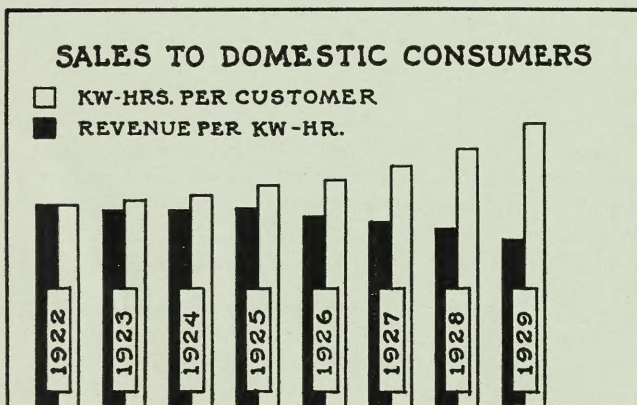
1922 - 14,313,000  
 1926 - 23,139,000    1928 - 27,116,000  
 1927 - 25,257,000    1929 - 29,559,000



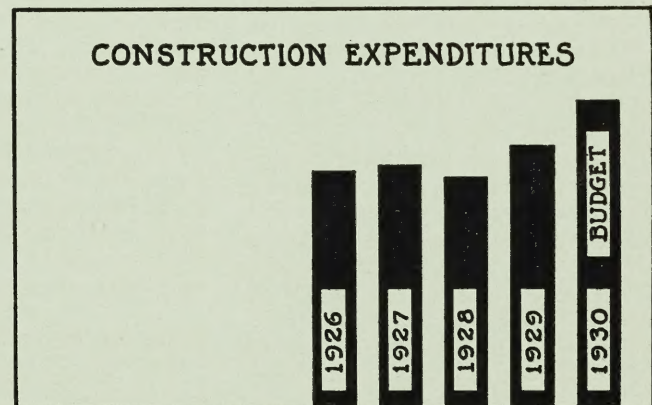
1922 - 12,710,000  
 1926 - 20,295,000    1928 - 23,153,000  
 1927 - 21,786,000    1929 - 24,147,000



1922 - \$940,162,000  
 1926 - \$1,489,563,000    1928 - \$1,796,277,000  
 1927 - \$1,662,520,000    1929 - \$1,955,326,000



KILOWATT-HOURS PER CUSTOMER  
 359 368 378 396 404 429 459 502  
 REVENUE PER KW-HR. (CENTS)  
 7.4 7.2 7.2 7.3 7.0 6.80 6.55 6.18



1926 - \$772,515,000    1927 - \$793,744,000  
 1928 - \$753,500,000    1929 - \$853,030,000  
 1930 - \$1,000,481,000



# THE ELECTRIC LIGHT AND POWER INDUSTRY FOR THE YEAR 1929

The year 1929 was one of outstanding growth in the electric light and power industry. Electric service in all of its important phases expanded remarkably, as shown by statistics compiled from reports submitted by companies representing 85 per cent of the industry.

## *Electric Output Increased 11.8%*

The generation of energy by public utility electric light and power plants increased by 9,491,000,000 kw-hr., or 11.8 per cent. The total output was practically 90,000,000,000 kw-hr., of which amount 59,000,000,000 or 66 per cent was furnished by fuels and 31,000,000,000 or 34 per cent was furnished by hydro-electric plants. The output from steam plants increased by 19.3 per cent while the output from hydro-electric plants showed a very slight decrease. The year 1929 was deficient in rainfall over a large part of the country, curtailing the output of hydro-electric plants and throwing more load on steam stations.

## *Fuel Efficiency Improved 4%*

The efficiency of fuel-burning plants continued to improve, reducing the average rate of fuel consumption from the equivalent of 1.74 lb. of coal per kw-hr. in 1928 to 1.67 in 1929, a further improvement of 4 per cent.

## *Generating Capacity Increased 9%*

The installed capacity of generating plant reached 29,558,000 kw., an increase of 2,440,000 kw. or 9 per cent. The new construction was divided approximately as follows: 2,200,000 kw. in steam plant, 160,000 kw. of hydro-electric plant, and 80,000 kw. in internal combustion plants.

The use made of generating capacity continued to improve. All generating plants taken together, the electric light and power industry operated an average of 34.8 per cent of capacity for the year as a whole as compared with 33.9 per cent in 1928 and 33.5 per cent in 1926. For the first time of record the average kw. of generator capacity was called upon to work more than 3000 hr. out of the 8760 hr. in a year.

## *Increase of 4.3% in Customers*

All classes of customers increased in number by 1,000,000 or 4.3 per cent, making a total at the end of 1929 of a

little over 24,000,000. The number of domestic consumers reached approximately 20,000,000, an increase of 900,000, or 4.6 per cent. The estimated total number of homes in the United States at the end of 1929 was 29,000,000 and the proportion served by electricity was thus 68 per cent as compared with 66 per cent a year earlier.

## *Farms Served Increased 21.6%*

Farm customers as of Dec. 31, 1929, numbered 560,000. This was an increase for the year of approximately 100,000 farms or 21.6 per cent.

In many states, farm electrification has already reached very considerable proportions. The rate of increase in some states is remarkable. For the entire country, 8.8 per cent of the farms are now served by central station power. In the states of California, Washington and Utah, one half of the farms are so served.

## *Revenues Increased 8.9%; Electricity to Customers 12.1%*

Revenue from all classes of consumers totaled \$1,955,325,000, an increase of \$159,050,000 or 8.9 per cent over the previous year. The increase in revenue of \$159,050,000 compares with an increase of \$133,757,000, or 8 per cent, for the previous year. This increase of 8.9 per cent, compared with an increase of 12.1 per cent in the total kw-hr. sales to ultimate consumers, furnishes a measure of the reduction in average prices.

Revenue from the sale of current to all classes of customers grew at a somewhat lesser rate than the output of energy, reflecting in part the high level of business activity of the past few years and the greater utilization of industrial power, and, to a larger degree, showing the results of the industry's general policy of reducing rates and thus passing on to the public the benefits accruing from the economies of improved engineering and management.

## *Price of Electricity Reduced 3%*

The average revenue per kw-hr. sold for all classes of customers was 2.58c. as compared with 2.66c. of the year before, a decrease of 3 per cent.

## *Domestic Rate Reduced 5.7%*

The average price of current to the domestic consumer dropped from 6.55c.

per kw-hr. to 6.18c., a reduction of .37c. or 5.7 per cent. At the same time the average consumer increased his use of current from 459 kw-hr. per annum to 502 kw-hr. per annum, an increase of 43 kw-hr. The average annual bill per customer increased from \$30.10 in 1928 to \$31.02. Thus, the average annual use of current by the domestic consumer increased 9.4 per cent and his average annual bill increased 3.1 per cent.

This reduction of .37c. per kw-hr. sold to the domestic consumer, multiplied by the total sales to domestic consumers of 9,804,000,000 kw-hr., represented a total saving to domestic customers of over \$36,000,000.

## *Construction Expenditures Up 13%*

New construction expenditures for the electric light and power industry were \$853,000,000, an increase of 13 per cent over like construction expenditures in 1928. This expenditure was \$53,000,000 in excess of the total budget as reported at the beginning of 1929. The budget for the year 1930, as reported, totaled just over \$1,000,000,000. This amount is 15 per cent greater than preliminary estimates had indicated.

The 1930 budget shows 30 per cent devoted to generating facilities; 32.5 per cent for transmission lines and substations, and 28.5 per cent for the distribution system. The remaining 9 per cent went to office buildings, service buildings and other miscellaneous uses. The \$298,000,000 for power plant construction is divided: 84 per cent for steam generating stations, and 16 per cent for hydro generating stations.

It is worthy of note that the increase of 13 per cent in new construction for 1929 over 1928 corresponds very closely with the increase in sales to ultimate consumers of 12.1 per cent.

## *Additional Transmission Lines*

Transmission line construction proceeded at about the normal rate. There were built 10,955 circuit miles of lines at 11,000 volts or above, making the total at the end of the year about 160,000 miles. In the previous year 11,009 miles were built and in the year before that 17,200 miles were built. The new budget shows still greater expenditures proposed for 1930 for building transmission lines.



## Expansion of Electric Service in the Eight Years Since 1922

Table II sets forth some outstanding statistical features covering the growth of the electric light and power industry in the eight years since 1922. In that time the population of the country increased by 11 per cent while the number of people living in electrically wired homes has increased by 75 per cent. The number of users of central station electric energy has thus grown nearly seven times as fast as has the population.

During the eight-year period, generating capacity more than doubled. At the same time the increase in output was still greater. It grew from approximately 40,000,000,000 kw-hr. to 90,000,000,000 kw-hr., an increase of 123 per cent.

The efficiency of fuel-burning plants resulted in the reduction of the average rate of fuel consumption from the equivalent of 2.7 lb. of coal per kw-hr. in 1922 to 1.67 in 1929.

Revenue from sales of electricity increased 108 per cent. This rate of growth was almost identical with the rate of installation of generating capacity but appreciably less than the rate of growth of output. The average revenue per kw-hr. from all classes of service dropped progressively from 2.79c. in 1922 to 2.58c. in 1929, a reduction of 7.5 per cent.

The average use of current per domes-

TABLE I  
PRODUCTION AND SALES OF ELECTRICITY

	1929	1928	% Increase	1927	1926
<b>Production of Energy</b>					
*Kw-hr. generated by fuels (net).....	58,988,131,000	49,446,510,000	+19.3	46,828,526,000	44,141,965,000
by water-power.....	30,956,297,000	31,006,988,000	— 0.2	26,381,919,000	23,843,817,000
*Total kw-hr. generated (net).....	89,944,428,000	80,453,498,000	+11.8	73,210,445,000	67,985,782,000
Energy from other sources.....	2,669,051,000	2,935,789,000	— 9.1	3,121,398,000	2,481,673,000
	92,613,479,000	83,389,287,000	+11.5	76,331,843,000	70,467,455,000
Used in company departments†.....	2,458,014,000	2,559,615,000	— 4.0	2,504,030,000	2,555,580,000
Total energy for distribution (kw-hr.).....	90,155,465,000	80,829,672,000	+11.5	73,827,813,000	67,911,875,000
Lost and unaccounted for.....	14,500,000,000	13,330,000,000	+ 8.8	12,640,000,000	11,610,000,000
<b>TOTAL KW-HR. SOLD TO ULTIMATE CONSUMERS</b> .....	<b>75,655,465,000</b>	<b>67,499,672,000</b>	<b>+12.1</b>	<b>61,187,813,000</b>	<b>56,301,875,000</b>
<b>Number of Customers (Dec. 31st)</b>					
Domestic Service.....	19,967,154	19,089,882	+ 4.6	17,950,934	16,706,621
Commercial service.....					
(a) Small light and power (retail).....	3,598,115	3,532,489	+ 1.9	3,358,140	3,154,530
(b) Large light and power (wholesale).....	539,668	498,957	+ 8.2	448,977	401,445
Municipal street lighting.....	22,769	22,550	.....	22,228	22,050
Railroads—motive power.....					
(a) Street and interurban railways†.....	815	814	.....	820	819
(b) Electrified steam railroads.....	20	20	.....	19	20
Municipal and miscellaneous.....	18,642	8,540	.....	5,094	9,973
<b>TOTAL NUMBER OF ULTIMATE CONSUMERS</b> .....	<b>24,147,183</b>	<b>23,153,252</b>	<b>+ 4.3</b>	<b>21,786,212</b>	<b>20,295,458</b>
<b>Kilowatt-hours Sold</b>					
Domestic service.....	9,803,902,000	8,491,607,000	+15.4	7,428,327,000	6,459,012,000
Commercial service.....					
(a) Small light and power (retail).....	13,199,189,000	11,480,075,000	+15.0	10,637,407,000	8,743,195,000
(b) Large light and power (wholesale).....	45,212,430,000	40,572,834,000	+11.4	36,284,288,000	34,909,887,000
Municipal street lighting.....	1,696,122,000	1,524,309,000	+11.3	1,349,372,000	1,882,221,000
Railroads—motive power.....					
(a) Street and interurban railways†.....	4,701,500,000	4,545,022,000	+ 3.4	4,634,216,000	4,455,288,000
(b) Electrified steam railroads.....	642,846,000	562,160,000	+14.3	481,239,000	332,361,000
Municipal and miscellaneous.....	399,476,000	323,665,000	+23.4	370,964,000	219,911,000
<b>TOTAL SALES TO ULTIMATE CONSUMERS</b> .....	<b>75,655,465,000</b>	<b>67,499,672,000</b>	<b>+12.1</b>	<b>61,187,813,000</b>	<b>56,301,875,000</b>
<b>Revenue from Sales of Electricity</b>					
Domestic service.....	\$605,878,000	\$556,022,000	+ 9.0	\$505,449,000	\$451,571,000
Commercial service.....					
(a) Small light and power (retail).....	577,611,000	522,343,000	+10.6	487,137,000	416,485,000
(b) Large light and power (wholesale).....	632,960,000	587,791,000	+ 7.7	546,264,000	510,732,000
Municipal street lighting.....	81,456,000	74,565,000	+ 9.2	68,340,000	58,299,000
Railroads—motive power.....					
(a) Street and interurban railways†.....	42,291,000	42,317,000	.....	43,523,000	42,386,000
(b) Electrified steam railroads.....	6,595,000	5,617,000	+17.4	4,933,000	3,434,000
Municipal and miscellaneous.....	8,535,000	7,622,000	+12.0	6,874,000	6,656,000
<b>TOTAL REVENUE FROM ULTIMATE CONSUMERS</b> .....	<b>\$1,955,326,000</b>	<b>\$1,796,277,000</b>	<b>+ 8.9</b>	<b>\$1,662,520,000</b>	<b>\$1,489,563,000</b>

Notes: This table differs somewhat from the preliminary summary published in "Electrical Research Statistics" for February, 1930 because of a reappraisal of the definition of what constitutes a public utility enterprise as compared with a power plant operating primarily as an adjunct to a manufacturing concern.

\*By courtesy of the U. S. Geological Survey with deductions for plants not considered electric light and power enterprises.

†During the year 1929 there has been a disposition on the part of numerous "combination" companies to regard the operation of their street railway departments as separate enterprises. The kw-hr. sold and revenues from this class of service thus show an increase, while "company use" declines by a similar amount.



tic consumer increased 40 per cent while his bill increased 17 per cent. The price of current to the domestic consumer dropped from 7.39c. per kw-hr. in 1922 to 6.18c. in 1929, or 16 per cent.

Capital expenditures for all purposes during the eight years from 1922 to 1929 totaled \$6,100,000,000 or an average of \$762,500,000 per year. During the last six years of this period the expenditures

of the electric light and power companies for new construction exceeded those of the railroads, hitherto regarded as the largest users of money.

TABLE II  
THE ELECTRIC LIGHT AND POWER INDUSTRY 1922-1929

	1929	1928	1927	1922 (a)	% Increase 1922-1929
Kilowatt capacity of generators*	29,558,637	27,116,000	25,257,000	14,313,438	106
Kilowatt-hours generated	89,944,428,000	80,453,498,000	73,210,445,000	40,291,536,035	123
By fuels	58,988,131,000	49,446,510,000	46,828,526,000	.....	...
Water power	30,956,297,000	31,006,988,000	26,381,919,000	.....	...
Fuel used, equivalent short tons of coal	48,942,000	42,585,000	41,700,000	.....	...
Pounds of coal per kw-hr. generated	1.67	1.74	1.79	.....	...
Number of customers*	24,147,183	23,153,252	21,786,212	12,709,868	90
Domestic customers (including farms)	19,967,154	19,089,882	17,950,934	10,211,232 <sup>b</sup>	96
Commercial customers and others	4,180,029	4,063,370	3,835,278	2,498,636 <sup>b</sup>	67
Revenues from sales of electricity to consumers	\$1,955,326,000	\$1,796,277,000	\$1,662,520,000	\$940,162,000	108
Total sales to ultimate consumers, kw-hr.	75,655,465,000	67,499,672,000	61,187,813,000	.....	...
Average revenue per kw-hr. sold	2.58c.	2.66c.	2.72c.	2.79c.	—8
Domestic service:					
Average use per consumer, kw-hr.	502	459	429	359 <sup>c</sup>	40
Average annual bill per consumer	\$31.02	\$30.10	\$29.20	\$26.50 <sup>c</sup>	17
Average revenue per kw-hr. sold	6.18c.	6.55c.	6.80c.	7.39c. <sup>c</sup>	—16
Population of the United States (July 1)	121,400,000	120,013,000	118,628,000	109,248,000	11
Percentage of homes served with electricity*	68	66	63	39 <sup>b</sup>	75

Notes: \*As of December 31st.

(a) U. S. Census of Electric Central Stations.

(b) "Electrical World" (c) N. E. L. A.

TABLE III  
COMMERCIAL STATISTICS—SALES OF ENERGY—1929

Sales to Ultimate Consumers	Number of Customers	Kw-hr. Sold	Revenue
Domestic service	19,967,154	9,803,902,000	\$605,878,000
Commercial service—			
(a) Small light and power (retail)	3,598,115	13,199,189,000	577,611,000
(b) Large light and power (wholesale)	539,668	45,212,430,000	632,960,000
Municipal street lighting	22,769	1,696,122,000	81,456,000
Railroads—motive power—			
(a) Street and interurban railways	815	4,701,500,000	42,291,000
(b) Electrified steam railroads	20	642,846,000	6,595,000
Municipal and miscellaneous	18,642	399,476,000	8,535,000
Total to ultimate consumers	24,147,183	75,655,465,000	\$1,955,326,000

TABLE IV  
THE AVERAGE ELECTRIC CONSUMER

Class of Service	In 1929				In 1928			
	Average Number of Consumers	Average per Consumer		Average Revenue per Kw-hr.	Average Number of Consumers	Average per Consumer		Average Revenue per Kw-hr.
		Sales, Kw-hr.	Revenue			Sales, Kw-hr.	Revenue	
Domestic (all uses)	19,528,500	502	\$31	6.18c	18,520,400	459	\$30	6.55c
Commercial:								
Small light and power (retail)	3,565,300	3,700	162	4.38	3,445,300	3,320	152	4.55
Large light and power (wholesale)	519,300	87,000	1,219	1.40	474,000	85,600	1,240	1.45
Total commercial	4,084,600	14,300	\$296	2.07c	3,919,300	13,300	\$283	2.13c
Railways	835	.....	.....	0.91	835	.....	.....	0.94
Municipal and miscellaneous (a)	36,000	.....	.....	4.29	29,000	.....	.....	4.44
All ultimate consumers	23,650,000	3,200	\$83	2.58c	22,470,000	3,000	\$80	2.66c

Note (a) Including street lighting.



## The Domestic Consumer

### Number of Customers

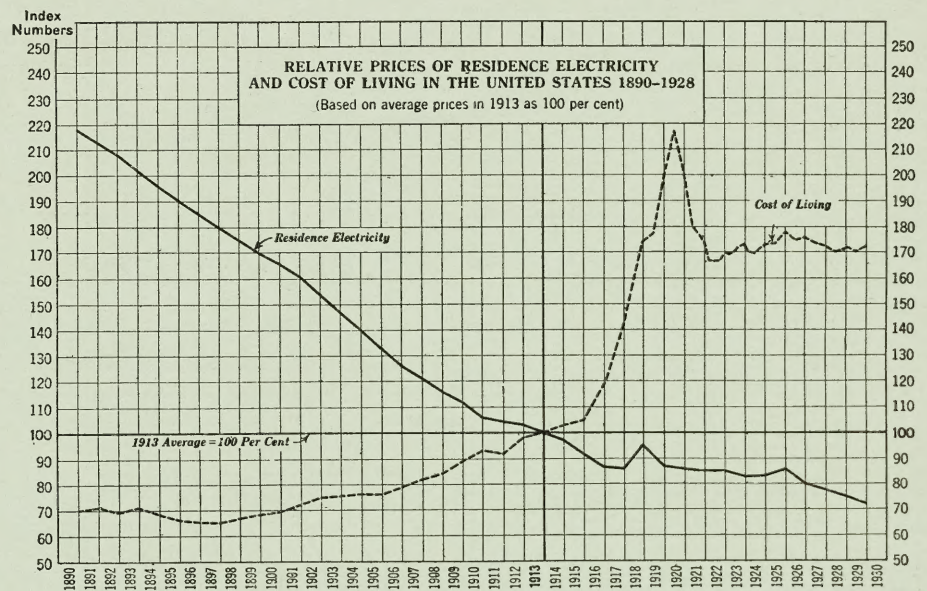
The growth in the use of electricity in the home has continued to show a remarkable increase, outstripping the rate of growth of any other class of service. As of Dec. 31, 1929, the number of homes served rose to 20,000,000 approximately, or 68 per cent of the estimated 29,000,000 homes in the United States. The rate of increase in number of domestic consumers has, however, fallen.

The increase in number of domestic consumers in 1929 was 4.6 per cent as compared with 6.3 per cent increase in 1928 and 7.3 per cent in 1927. This rate is affected by the progress of residential building; by the increasing cost and difficulty of reaching the remaining unwired homes because of the leaner territory and therefore the greater extensions required per customer; and by the lower purchasing power of a large part of this remaining population. The degree of saturation of wired homes in the more densely settled areas of population is very high, whereas in eleven states the ratio of wired homes to total number of homes is less than 35 per cent.

### Consumption Per Customer

Offsetting the slackened rate of increase in the number of domestic consumers has been the enlarged consumption per consumer. This average consumption reached 502 kw-hr. in 1929, an increase of 9.4 per cent, and reflects the greater demand for electricity for refrigeration, for cooking, for improved lighting, for radio, for labor-saving devices for washing, ironing and cleaning, for water heating and for numerous other home uses.

That the national average of consumption per customer will continue to



increase at a rapid rate is apparent from the fact that some companies in the United States located in various sections of the country, including some of the largest companies, have reported for their territories average uses per domestic customer ranging from 600 to 1800 kw-hr. per annum and have shown increases during the past year in the per customer use of 50 to 200 kw-hr.

### Household Appliances

Figures compiled by *Electrical Merchandising* show a total of appliance sales last year to domestic consumers of \$808,000,000 not including \$727,000,000 worth of alternating current radio sets. This means that American homes spent

over a billion and a half dollars for electrical equipment or more than two and a half times as much as they spent for the current to operate it.

### Cost of Electricity

Rates for electricity for domestic consumption have been adjusted downward in proportion to the decreased unit cost of serving the domestic consumer as his use of electricity has increased. The average domestic consumer in 1929 increased his use of electricity by 43 kw-hr. or 9.4 per cent. The average price paid declined from 6.55c. per kw-hr. in 1928 to 6.18c. per kw-hr. in 1929 or 5.7 per cent. This reduction meant a saving of approximately \$36,000,000 to the domestic consumers in the United States.

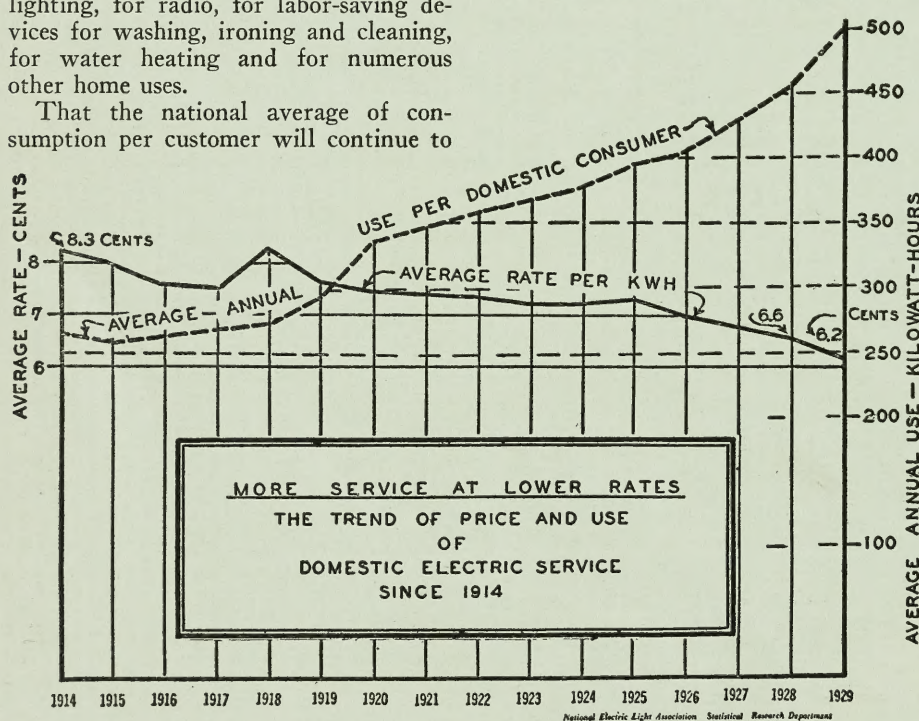
In the eight-year period since 1922 the average domestic consumer has increased his use of current by 40 per cent while his annual bill has grown by 17 per cent.

The total saving to the consumers resulting from rate reductions was \$365,000,000 for the eight-year period.

It is worthy of note that the rate of increase in the use of electricity for domestic purposes and the corresponding rate of decrease in price are accelerating. Beginning with 1926 and proceeding year by year, the rates of decrease of the average price of electricity for domestic use have been as follows: 2.9 per cent, 3.7 per cent and 5.7 per cent.

Table V—Domestic Electric Service

Year	Average Use, Kw.-hr.	Average Annual Bill	Average Price Paid Per Kw.-hr.
1914	268	\$22.25	8.30c.
1922	359	26.50	7.39
1926	404	28.26	6.99
1927	429	29.20	6.80
1928	459	30.10	6.55
1929	502	31.02	6.18



National Electric Light Association Statistical Research Department



TABLE VI  
FARM SERVICE AS INDICATED BY 200 COMPANIES REPORTING

Classification	Number of Customers Reported (Dec. 31)	Kilowatt-hours Sold	Revenue	Annual Average per Customer		Average Revenue per Kw-hr. Sold
				Kw-hr. Sold	Revenue	
Farms involving irrigation.....	97,959	1,208,542,000	\$18,587,000	14,400	\$222	1.54c
Farms not involving irrigation.....	245,210	142,950,000	9,907,000	707	49	6.93c
Total.....	343,169	1,351,492,000	\$28,494,000	.....	.....	.....

Note: In the preparation of Tables II and III (commercial statistics—sales of electricity), farm service not involving irrigation, as set out above, has been included in "domestic service" while farm service involving irrigation has been included in "commercial service—large light and power (wholesale)."

The domestic consumer is now paying \$31 a year or about \$2.60 a month for his current. Electricity thus takes considerably less than 2 per cent of the total expenditure of the average American family. It is the cheapest essential in the "cost of living." Table V and the charts illustrate these points.

### Farm Service

The Association has again attempted this year to collect statistics covering the amount of electricity used by agricultural consumers. Table VI shows the kilowatt-hours sold and revenues paid for this energy as recorded by those companies which were able to report farm service as a separate classification. This table may, therefore, be considered merely as a cross-section of rural electric service. It does not show the totals for the entire country, as the bulk of the business is still included by many companies under the single classification of "domestic service."

Because irrigation pumping in certain regions of the United States is an item of such magnitude as to mask completely all other farm uses, both as to amounts used per farm and prices per kw-hr., Table VI has been set up in two divisions, the second one only being representative of the average performance of the average farm.

Roughly speaking, farms lying west of the hundredth meridian were thrown into the category involving irrigation. The division is entirely arbitrary and very roughly drawn. Possibly half or two-thirds of the farms in the irrigation states do no pumping, but statistics are not available to make a more accurate separation.

It is gratifying to note, and is of hopeful significance for the future, both of agriculture and of the electric light and power industry, that, as reported by the 200 companies that have been able to keep separate records of their actual

performance, the use of electricity per farm is already considerably in excess of urban domestic requirements.

The distribution of electrified farms by individual States and their increase during the year are shown in Table XVI (on page 11).

### Source and Disposal of Energy

Of the total energy available during the year 1929 for distribution to the public, 63.7 per cent was generated by fuels and 33.4 per cent by waterpower. The balance, or 2.9 per cent was imported from Canada or received from Federal State and District hydro-electric projects or from industrial enterprises which were not public utilities. The figures show a sharp rise in the proportion of energy generated by steam (which was 59.4 per cent during the previous year), due to the deficiency in water supplies which prevailed throughout the greater part of the northern half of the United States.

The generation of electricity by fuels and by waterpower in each State during 1929 is shown in Table XIII (on page 8).

### Fuel Used in Electrical Generation

Table VIII gives a summary of the fuel used by the electric light and power plants of the country, which were actually public utility enterprises and neither traction companies nor adjuncts of what were primarily industrial concerns.

TABLE VIII  
FUEL USED FOR ELECTRICAL GENERATION 1929

Coal (anthracite and bituminous, in short tons).....	41,406,000
Oil (in 42 gal. bbls.).....	9,740,000
Gas (in 1000 cu. ft.).....	112,443,000
Total fuel (including small amounts of fuels not shown above) in equivalent short tons of coal.....	48,942,000
Energy generated by use of fuels—net kw-hr. ....	58,592,000,000
Pounds of coal (or its equivalent) per kw-hr. ....	1.67 lb.

TABLE VII  
SOURCE AND DISPOSAL OF ENERGY

SOURCE OF ENERGY	Year 1929 Kilowatt-hours	Year 1928 Kilowatt-hours
<b>Generation—</b>		
By fuels .....	58,988,131,000	49,446,510,000
Water power .....	30,956,297,000	31,006,988,000
Total generation (net).....	89,944,428,000	80,453,498,000
<b>Energy from Other Sources—</b>		
Excess of international imports over exports .....	958,009,000	
Net energy received from various Federal, State, and District projects and from industrial plants.....	1,711,042,000	
Total energy from other sources.....	2,669,051,000	2,935,789,000
Total energy available for distribution.....	92,613,479,000	83,389,287,000
<b>DISPOSAL OF ENERGY</b>		
Sales to ultimate consumers (see Table III).....	75,655,465,000*	67,499,672,000*
Used in electric railway department..	1,266,832,000	
Used in other departments.....	1,191,182,000	
Total company use.....	2,458,014,000	2,559,615,000
Total accounted for.....	78,113,479,000*	70,059,289,000*
Balance unaccounted for (losses, etc.).....	14,500,000,000	13,330,000,000*
Total energy distributed.....	92,613,479,000	83,389,287,000

\*Subject to slight change upon final summary of individual State data.



### Transmission Lines

Table IX shows the total circuit miles of transmission lines in service during the past four years, grouped according to their major classifications. In addition, there are shown the number of companies reporting the various voltages. Of the voltages in most common use, the largest rate of growth is still indicated in lines carrying 66,000 volts, which at present comprise 13 per cent of the total mileage. It is gratifying to note that there is a steady trend toward the adoption of voltages recommended as standard and a corresponding decline in the proportion of lines carrying odd voltages.

### New Construction

Table XI gives the distribution of actual 1929 construction expenditures and the budget for 1930, as estimated for the total electric light and power industry. These are somewhat larger than in previous years.

The large expenditures going into distribution show that the electric light and power companies are engaged in extensive programs in building up and extending distribution facilities to take care of existing increased demands, to provide for the much heavier demands anticipated, and to improve the standards of service. The heavy capital expenditures required to distribute electricity necessitate long range planning of from five to ten years and systematic construction programs. The growth of the domestic load, indicating as it does uses per customer ten years hence of 1000 to 2000 kw-hr. per annum, explains to a considerable extent these heavy expenditures now going into distribution plant.

TABLE IX  
MILES OF TRANSMISSION LINES, BY VOLTAGES  
YEARS 1926-1929 INCLUSIVE

Total Circuit Miles of Transmission Lines (100% of Industry)					
Voltages .....	1929	Per Cent of Total,	1928	1927	1926
		1929			
220,000** .....	1,442	0.9	1,442	1,257	1,054
132,000** .....	4,448	2.8	4,010	3,343	3,125
110,000* .....	10,159	6.4	9,114	8,661	7,875
66,000** .....	21,236	13.3	18,716	15,212	12,157
60,000 .....	8,174	5.1	8,076	9,257	8,801
44,000* .....	8,761	5.5	8,732	8,492	7,517
33,000** .....	28,523	17.9	27,451	24,706	23,831
22,000* .....	12,583	7.9	11,545	10,429	10,130
13,200** (a) .....	21,340	13.4	19,551	18,441	19,496
11,000* .....	10,860	6.8	10,007	9,145	8,072
All other over 11,000 ..	31,916	20.0	29,843	28,535	28,223
Total Industry .....	159,442	100.0	148,487	137,478	130,283

Notes: \*Recognized as in common use by the International Electrotechnical Commission.

\*\*Preferred for standard by United States National Committee of the International Electrotechnical Commission.

TABLE X  
DISTRIBUTION OF VOLTAGES, AS REPORTED BY 312 COMPANIES

Voltages	Number of Companies Reporting Voltages Indicated			
	1929	1928	1927	1926
220,000** .....	5	5	3	2
132,000** .....	39	32	27	25
110,000* .....	47	42	38	32
66,000** .....	125	123	116	102
60,000 .....	18	19	21	22
44,000* .....	40	41	39	36
33,000** .....	152	147	138	135
22,000* .....	87	89	89	84
13,200** (a) .....	145	142	128	127
11,000* .....	65	69	71	65
All other over 11,000 (b) .....	155	153	139	145

Notes: (a) Also includes 13,000 volts.

(b) Duplicated by companies having more than one odd voltage.

TABLE XI  
CONSTRUCTION EXPENDITURES AND BUDGET FOR 1930  
TOTAL ELECTRIC LIGHT AND POWER INDUSTRY

	1930 Budget	1929 Gross Construction Expenditures	1928 Gross Construction Expenditures	1927 Gross Construction Expenditures	1926 Gross Construction Expenditures
Steam generating stations .....	\$249,425,000	\$188,211,000	\$136,500,000	\$156,360,000	\$189,058,000
Hydro generating stations .....	48,830,000	51,120,000	56,300,000	69,268,000	47,399,000
Substations .....	138,031,000	119,839,000	107,000,000	118,877,000	121,019,000
Transmission .....	186,711,000	145,064,000	125,100,000	140,573,000	115,946,000
Distribution .....	285,274,000	260,751,000	211,800,000	219,962,000	206,209,000
Miscellaneous electric .....	92,210,000	88,045,000	116,800,000	88,704,000	92,884,000
Total for electric operations .....	\$1,000,481,000	\$853,030,000	\$753,500,000	\$793,744,000	\$772,515,000



TABLE XII  
GENERATING CAPACITY IN KILOWATTS  
(as of December 31, 1929)

	Steam	Water-Power	Internal Combustion	Total
<i>Total U. S. ....</i>	<i>21,743,602</i>	<i>7,438,882</i>	<i>376,153</i>	<i>29,558,637</i>
Alabama .....	239,625	402,185	2,520	644,330
Arizona .....	31,279	66,650	15,580	113,509
Arkansas .....	73,335	10,855	6,744	90,934
California .....	1,028,400	1,497,105	6,109	2,531,614
Colorado .....	141,516	51,907	1,379	194,802
Connecticut .....	413,130	77,640	480	491,250
Delaware .....	31,350	.....	915	32,265
Florida .....	324,598	14,450	23,913	362,961
Georgia .....	73,619	263,350	1,011	337,980
Idaho .....	950	204,010	470	205,430
Illinois .....	2,201,050	43,925	4,565	2,249,540
Indiana .....	871,905	34,820	3,807	910,532
Iowa .....	359,217	150,818	15,847	525,882
Kansas .....	296,062	6,230	35,855	338,147
Kentucky .....	201,680	105,170	8,682	315,532
Louisiana .....	217,747	.....	13,867	231,614
Maine .....	36,920	150,365	812	188,097
Maryland and D. C. ...	507,760	272,185	1,480	781,425
Massachusetts .....	976,635	121,460	3,065	1,101,160
Michigan .....	1,223,870	207,315	5,257	1,436,442
Minnesota .....	259,114	121,520	5,504	386,138
Mississippi .....	45,016	.....	11,119	56,135
Missouri .....	504,067	9,670	19,677	533,414
Montana .....	8,085	300,314	1,465	309,864
Nebraska .....	151,264	9,883	20,149	181,296
Nevada .....	350	8,991	1,436	10,777
New Hampshire .....	42,005	68,835	1,400	112,240
New Jersey .....	729,665	1,100	1,740	732,505
New Mexico .....	31,664	871	6,295	38,833
New York .....	2,756,695	927,182	8,695	3,692,572
North Carolina .....	337,395	238,500	2,091	577,986
North Dakota .....	48,795	.....	2,221	51,016
Ohio .....	2,081,891	12,675	2,640	2,097,206
Oklahoma .....	258,560	1,700	31,031	291,291
Oregon .....	119,400	155,624	1,479	276,503
Pennsylvania .....	2,260,685	212,295	9,706	2,482,686
Rhode Island .....	241,200	1,750	.....	242,950
South Carolina .....	116,998	378,500	330	495,828
South Dakota .....	44,978	4,200	11,175	60,353
Tennessee .....	204,245	126,961	3,043	334,249
Texas .....	738,902	6,468	62,729	808,099
Utah .....	41,000	97,440	1,900	140,340
Vermont .....	13,781	162,393	.....	176,174
Virginia .....	329,341	75,516	3,461	408,318
Washington .....	141,227	539,112	814	681,153
West Virginia .....	463,078	56,260	4,136	523,474
Wisconsin .....	499,518	238,652	6,443	744,613
Wyoming .....	24,032	2,030	3,116	29,178



TABLE XIII  
KILOWATT-HOURS GENERATED (NET), YEAR 1929

	By Fuels	By Water-Power	Total
<i>Total U. S.</i> .....	<i>58,988,131,000</i>	<i>30,956,297,000</i>	<i>89,944,428,000</i>
Alabama .....	18,553,000	1,639,719,000	1,658,272,000
Arizona .....	85,697,000	192,660,000	278,357,000
Arkansas .....	77,397,000	50,195,000	127,592,000
California .....	2,454,068,000	5,696,305,000	8,150,373,000
Colorado .....	288,727,000	226,178,000	514,905,000
Connecticut .....	1,074,270,000	199,276,000	1,273,546,000
Delaware .....	52,867,000	.....	52,867,000
Florida .....	641,478,000	20,205,000	661,683,000
Georgia .....	73,435,000	1,062,105,000	1,135,540,000
Idaho .....	73,000	804,100,000	804,173,000
Illinois .....	7,112,792,000	228,462,000	7,341,254,000
Indiana .....	2,290,706,000	141,048,000	2,431,754,000
Iowa .....	673,014,000	786,771,000	1,459,785,000
Kansas .....	976,604,000	22,763,000	999,367,000
Kentucky .....	365,634,000	296,622,000	662,256,000
Louisiana .....	989,694,000	.....	989,694,000
Maine .....	79,465,000	591,472,000	670,937,000
Maryland and D. C. ....	1,202,221,000	1,270,432,000	2,472,653,000
Massachusetts .....	2,190,185,000	467,651,000	2,657,836,000
Michigan .....	3,593,426,000	841,696,000	4,435,122,000
Minnesota .....	463,451,000	534,859,000	998,310,000
Mississippi .....	56,427,000	.....	56,427,000
Missouri .....	1,146,483,000	72,133,000	1,218,616,000
Montana .....	18,019,000	1,595,573,000	1,613,592,000
Nebraska .....	464,173,000	34,018,000	498,191,000
Nevada .....	2,399,000	41,663,000	44,062,000
New Hampshire .....	79,543,000	226,768,000	306,311,000
New Jersey .....	2,125,144,000	2,919,000	2,128,063,000
New Mexico .....	65,338,000	1,841,000	67,179,000
New York .....	6,540,289,000	4,867,809,000	11,408,098,000
North Carolina .....	178,301,000	969,079,000	1,147,380,000
North Dakota .....	104,897,000	.....	104,897,000
Ohio .....	6,204,968,000	43,698,000	6,248,666,000
Oklahoma .....	973,263,000	3,733,000	976,996,000
Oregon .....	368,883,000	767,045,000	1,135,928,000
Pennsylvania .....	7,231,198,000	819,666,000	8,050,864,000
Rhode Island .....	648,559,000	4,214,000	652,773,000
South Carolina .....	141,302,000	1,316,197,000	1,457,499,000
South Dakota .....	94,376,000	13,678,000	108,054,000
Tennessee .....	329,079,000	691,401,000	1,020,480,000
Texas .....	2,773,989,000	19,344,000	2,793,333,000
Utah .....	109,962,000	292,181,000	402,143,000
Vermont .....	8,399,000	446,669,000	455,068,000
Virginia .....	959,130,000	337,762,000	1,296,892,000
Washington .....	336,637,000	2,175,019,000	2,511,656,000
West Virginia .....	1,960,883,000	173,108,000	2,133,991,000
Wisconsin .....	1,305,343,000	964,545,000	2,269,888,000
Wyoming .....	57,390,000	3,715,000	61,105,000



TABLE XIV  
NUMBER OF CUSTOMERS  
(As of December 31, 1929)

		Commercial			Total
		Domestic	Small Light & Power	Large Light & Power	
Total	U. S.				
	19,967,154	3,598,115	539,668	42,246	24,147,183
Alabama	151,677	38,711	956	215	191,559
Arizona	55,505	10,182	2,367	70	68,124
Arkansas	96,110	30,684	6,672	227	133,693
California	1,431,013	275,862	94,655	5,824	1,807,354
Colorado	163,344	29,735	15,474	199	208,752
Connecticut	334,581	77,671	5,665	167	418,084
Delaware	34,864	8,023	420	63	43,370
Florida	213,897	37,876	5,592	1,091	258,456
Georgia	193,803	42,293	860	314	237,270
Idaho	54,063	15,886	14,929	127	85,005
Illinois	1,589,429	270,033	18,180	3,045	1,880,687
Indiana	585,696	92,406	7,280	1,544	686,926
Iowa	374,659	77,283	8,013	1,072	461,027
Kansas	280,563	53,849	9,090	572	344,074
Kentucky	229,253	51,212	4,445	557	285,467
Louisiana	150,039	30,418	7,026	379	187,862
Maine	146,775	38,928	5,555	1,222	192,480
Maryland and D. C.	376,548	64,709	1,666	205	443,128
Massachusetts	1,007,384	167,937	15,036	496	1,190,853
Michigan	943,465	158,621	3,026	762	1,105,874
Minnesota	393,887	64,236	15,211	920	474,254
Mississippi	79,984	20,483	2,312	245	103,024
Missouri	555,107	94,421	12,262	3,542	665,332
Montana	64,158	19,766	3,128	134	87,186
Nebraska	202,027	34,764	4,270	632	241,693
Nevada	13,000	2,473	2,164	19	17,656
New Hampshire	100,986	13,212	2,771	588	117,557
New Jersey	923,794	153,982	40,222	1,871	1,119,869
New Mexico	26,197	4,814	1,633	29	32,673
New York	3,043,398	519,557	20,761	3,251	3,586,967
North Carolina	196,549	45,048	4,884	225	246,706
North Dakota	50,567	13,420	2,020	389	66,396
Ohio	1,318,520	188,226	20,767	3,294	1,530,807
Oklahoma	225,959	52,633	18,737	815	298,144
Oregon	183,488	36,373	14,549	269	234,679
Pennsylvania	1,710,288	281,758	29,029	3,082	2,024,157
Rhode Island	159,372	22,582	4,068	32	186,054
South Carolina	95,801	22,114	1,177	116	119,208
South Dakota	64,753	16,414	2,573	442	84,182
Tennessee	198,691	45,273	6,234	203	250,401
Texas	550,344	125,298	23,400	966	700,008
Utah	94,296	12,312	11,404	159	118,171
Vermont	60,752	14,707	2,413	305	78,177
Virginia	208,648	27,215	3,974	669	240,506
Washington	335,947	60,685	46,417	353	443,402
West Virginia	145,893	44,489	2,671	640	193,693
Wisconsin	523,110	84,728	12,572	856	621,266
Wyoming	28,970	4,813	1,138	49	34,970



TABLE XV  
NUMBER OF HOMES RECEIVING ELECTRIC SERVICE\*  
YEARS 1925-1929

State	Number of Homes Receiving Electric Service				
	On Dec. 31, 1925	On Dec. 31, 1926	On Dec. 31, 1927	On Dec. 31, 1928	On Dec. 31, 1929
<i>Total United States</i> .....	15,323,990	16,761,638	18,021,989	19,177,732	20,070,783
Alabama .....	103,874	120,394	132,816	145,341	151,677
Arizona .....	35,352	38,693	44,985	50,565	56,768
Arkansas .....	72,719	78,239	84,539	91,359	97,719
California .....	1,143,213	1,223,213	1,296,513	1,373,013	1,431,013
Colorado .....	143,918	156,324	160,054	166,461	171,423
Connecticut .....	272,555	292,155	309,905	323,660	334,581
Delaware .....	23,576	26,580	29,000	32,074	34,864
Florida .....	164,660	219,219	217,949	214,549	213,897
Georgia .....	122,090	137,575	156,195	183,595	193,803
Idaho .....	58,654	60,654	61,594	62,551	65,817
Illinois .....	1,302,110	1,403,110	1,478,897	1,530,185	1,589,429
Indiana .....	497,820	523,970	547,583	564,583	585,696
Iowa .....	324,806	341,746	354,986	365,611	374,659
Kansas .....	228,193	241,573	254,817	265,492	280,563
Kentucky .....	156,245	183,245	202,445	216,005	229,253
Louisiana .....	113,223	131,524	136,524	142,484	152,479
Maine .....	126,565	131,725	140,944	147,706	146,775
Maryland and District of Columbia .....	252,412	290,480	320,000	347,105	376,548
Massachusetts .....	778,930	845,784	906,384	959,384	1,007,384
Michigan .....	727,051	778,251	831,651	895,835	943,465
Minnesota .....	343,523	361,173	379,607	390,037	393,887
Mississippi .....	49,880	53,092	60,227	72,627	79,994
Missouri .....	466,993	494,801	517,441	540,061	555,107
Montana .....	54,052	55,380	60,871	63,948	66,002
Nebraska .....	169,312	175,392	185,781	192,404	202,027
Nevada .....	11,889	12,489	13,081	13,753	14,360
New Hampshire .....	76,929	83,349	91,489	98,629	100,986
New Jersey .....	640,399	727,238	798,060	863,560	923,794
New Mexico .....	19,169	20,434	22,478	25,152	27,276
New York .....	2,143,681	2,437,981	2,690,708	2,914,708	3,043,398
North Carolina .....	157,075	164,316	174,976	187,676	196,549
North Dakota .....	36,177	42,527	45,907	48,872	50,567
Ohio .....	1,018,500	1,100,743	1,173,997	1,243,497	1,318,520
Oklahoma .....	151,990	165,990	187,720	211,520	229,262
Oregon .....	151,382	165,482	174,642	188,375	197,290
Pennsylvania .....	1,317,958	1,427,958	1,549,958	1,649,132	1,710,288
Rhode Island .....	120,300	131,790	141,230	153,646	159,372
South Carolina .....	61,838	67,988	78,588	92,411	95,801
South Dakota .....	53,523	57,483	61,424	64,086	64,753
Tennessee .....	149,984	165,544	177,166	187,166	198,691
Texas .....	395,580	435,580	484,180	528,805	557,365
Utah .....	94,633	98,353	101,000	103,554	106,026
Vermont .....	56,130	57,130	58,720	59,352	60,752
Virginia .....	154,344	169,344	182,687	194,057	208,648
Washington .....	279,840	307,340	332,562	355,183	373,760
West Virginia .....	75,401	95,401	118,801	134,127	145,893
Wisconsin .....	402,857	438,269	464,854	496,478	523,100
Wyoming .....	22,686	24,617	26,053	27,358	29,502

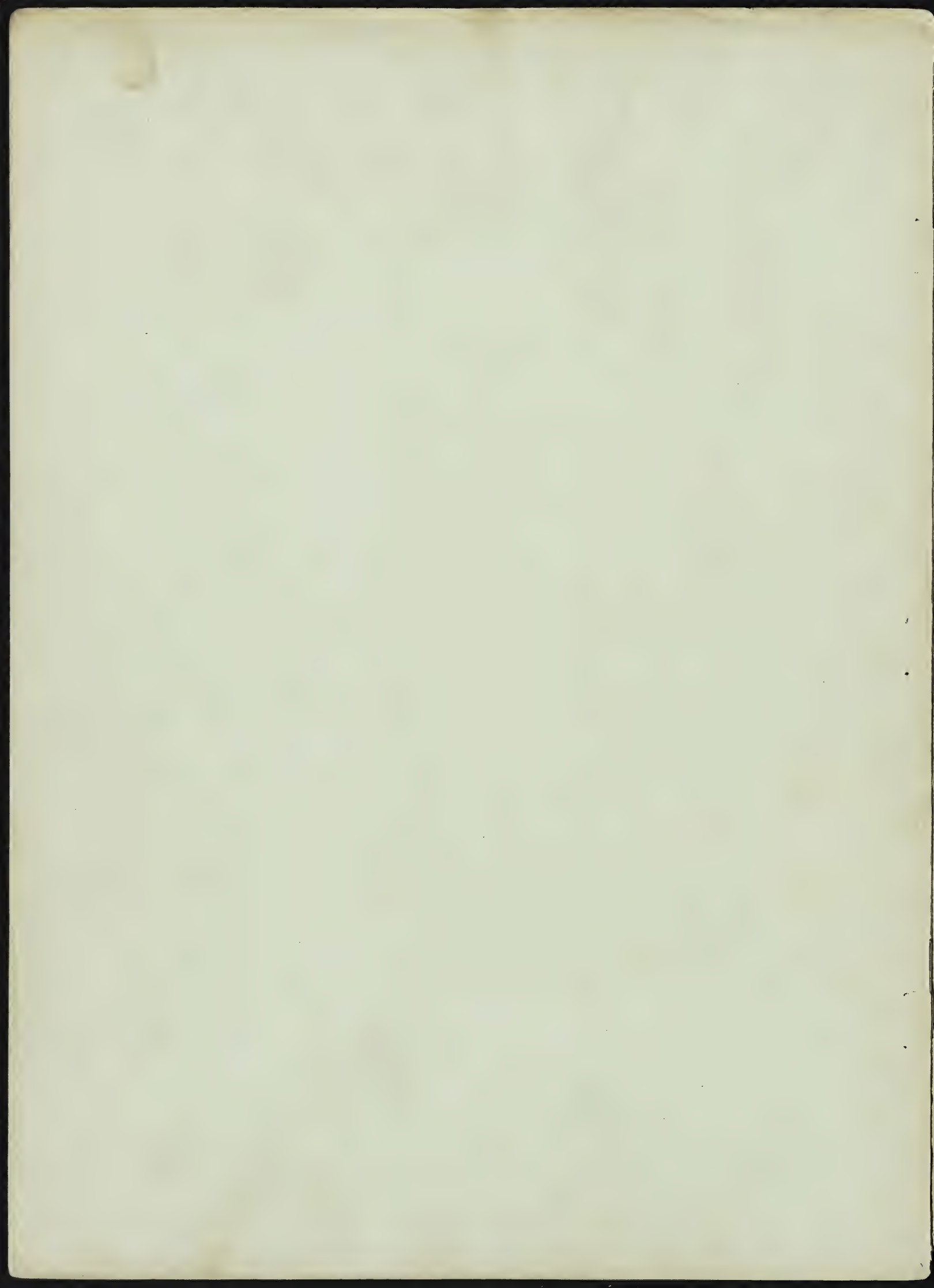
\* The number of homes receiving electric service is a total of the customers served on the domestic and farm service rate schedules except in California where a large amount of irrigation pumping is involved.



TABLE XVI  
ESTIMATED NUMBER OF FARMS SERVED

State	Total Number All Farms	Number of Farms Served		Number Added During 1929	% Electrified	
		on Dec. 31, 1929	on Dec. 31, 1928		% In- crease	on Dec. 31, 1929
<i>Total U. S.</i>	<i>6,371,640</i>	<i>560,426</i>	<i>460,969</i>	<i>99,457</i>	<i>21.6</i>	<i>8.8</i>
Alabama	237,631	8,062	6,632	1,430	21.6	3.4
Arizona	10,802	3,989	2,065	1,924	93.1	37.0
Arkansas	221,991	1,609	1,217	392	32.2	0.7
California	136,409	72,690	62,720	9,970	15.9	53.3
Colorado	58,020	8,079	6,670	1,409	21.1	13.9
Connecticut	23,240	4,464	4,141	323	7.8	19.2
Delaware	10,257	922	700	222	31.7	9.0
Florida	59,217	3,386	2,781	605	21.7	5.7
Georgia	249,095	4,129	3,941	188	4.8	1.7
Idaho	40,592	11,754	9,157	2,597	28.4	29.0
Illinois	225,601	16,854	13,494	3,360	24.9	7.5
Indiana	195,786	17,983	15,163	2,820	18.6	9.2
Iowa	213,490	17,947	13,817	4,130	29.9	8.4
Kansas	165,879	7,552	5,331	2,221	41.7	4.6
Kentucky	258,524	7,225	5,700	1,525	26.7	2.8
Louisiana	132,450	2,440	1,904	536	28.2	1.8
Maine	50,033	14,750	11,878	2,872	24.2	29.5
Maryland and D. C.	49,140	9,635	8,217	1,418	17.3	19.6
Massachusetts	33,454	12,353	11,097	1,256	11.3	36.9
Michigan	192,327	25,848	18,200	7,648	42.0	13.4
Minnesota	188,231	11,252	10,500	752	7.2	6.0
Mississippi	257,228	1,964	1,356	608	44.8	0.8
Missouri	260,473	9,129	7,007	2,122	30.3	3.5
Montana	46,904	1,844	890	954	107.2	3.9
Nebraska	127,734	6,537	4,047	2,490	61.5	5.1
Nevada	3,883	1,360	1,200	160	13.3	35.0
New Hampshire	21,065	6,273	3,503	2,770	79.1	29.8
New Jersey	29,671	9,526	8,944	582	6.5	32.1
New Mexico	31,687	1,079	923	156	16.9	3.4
New York	188,754	53,060	47,800	5,260	11.0	28.1
North Carolina	283,482	5,940	5,250	690	13.2	2.1
North Dakota	75,970	518	506	12	2.4	0.7
Ohio	244,703	38,045	30,575	7,470	24.4	15.5
Oklahoma	197,218	3,303	2,668	635	23.8	1.7
Oregon	55,911	13,802	11,428	2,374	20.8	24.7
Pennsylvania	200,443	33,335	27,105	6,230	23.0	16.6
Rhode Island	3,911	839	755	84	11.1	21.5
South Carolina	172,767	1,723	1,178	545	46.3	1.0
South Dakota	79,537	1,484	1,242	242	16.3	1.9
Tennessee	252,669	1,578	1,218	360	29.5	0.6
Texas	465,646	7,021	5,785	1,236	21.4	1.5
Utah	25,992	11,730	10,114	1,616	16.0	45.1
Vermont	27,786	2,810	2,414	396	16.4	10.1
Virginia	193,723	10,236	7,680	2,556	33.3	5.3
Washington	73,267	37,813	34,443	3,370	9.8	51.6
West Virginia	90,380	5,845	4,525	1,320	29.2	6.5
Wisconsin	193,155	30,177	22,700	7,477	33.5	15.6
Wyoming	15,512	532	388	144	37.1	3.4







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1930

*Statistical*

*Bulletin*

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*June 1931*

NATIONAL ELECTRIC LIGHT ASSOCIATION

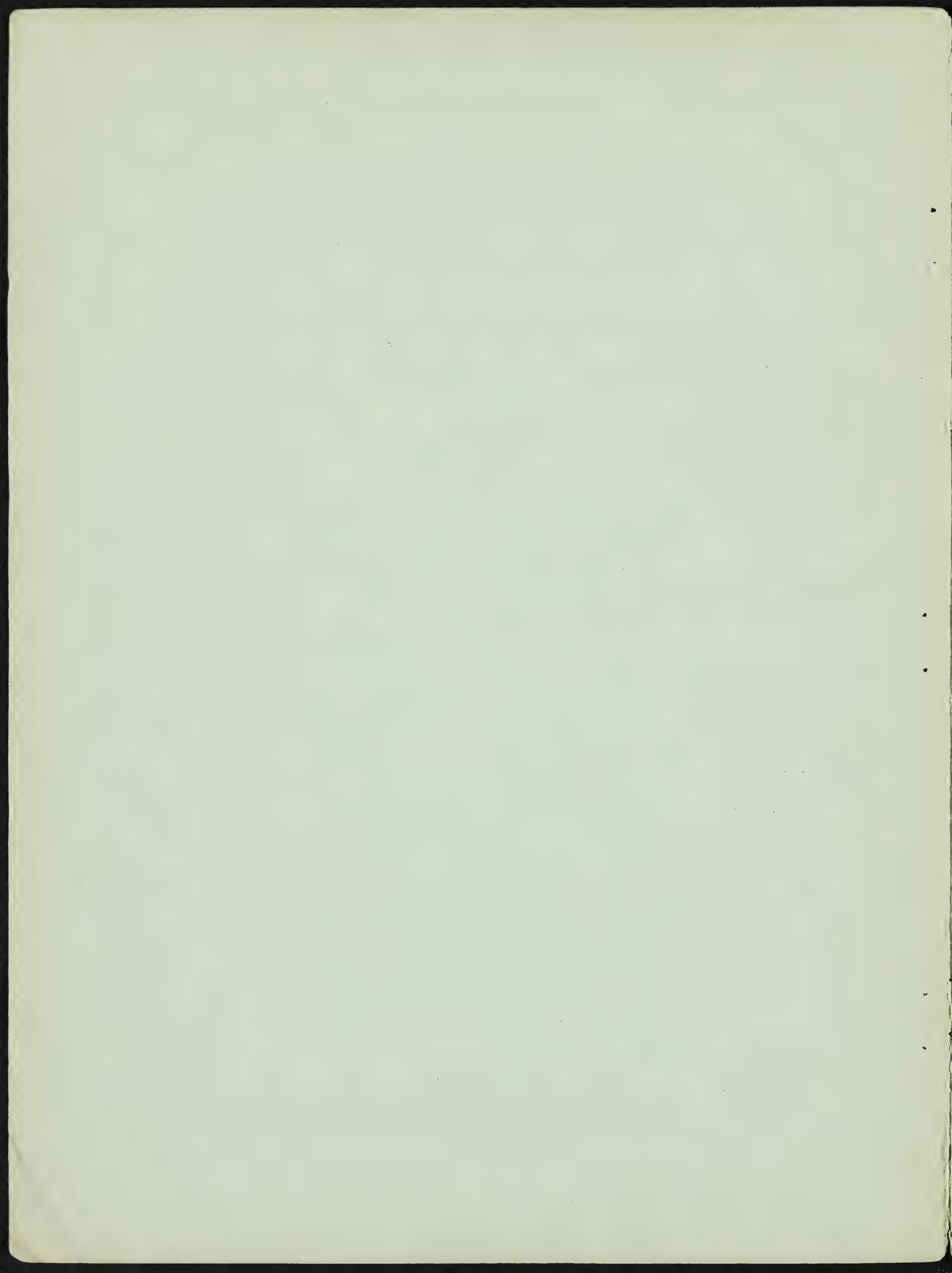
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## FOREWORD

THE statistics herein contained embrace the operations of enterprises devoted exclusively to the generation and distribution of electricity, plus the electric departments of all others which maintained electric light and power systems jointly with other public utility services. These "composite" companies constitute approximately three-quarters of the total number.

These data were determined from reports received at N. E. L. A. headquarters from some 400 companies, whose operations represented approximately 92 per cent of the entire industry and, together with the published returns of municipal systems and of others filed with various Public Service Commissions, were prorated to cover 100 per cent of the total electric light and power business.

Certain changes and corrections, made so as to conform to the 1927 Census of Central Electric Light and Power Stations, have been introduced in the figures for previous years as shown by earlier Statistical Bulletins.

Figures for sales and revenues, reported herein, show some divergence from the preliminary data reported early in 1931. This was occasioned by the fact that this year a number of large companies made a complete revision of customer classifications.

Revenue figures appearing throughout this Bulletin, as in all light and power statistics, represent *total billings* and not money actually collected.

In this Bulletin there has been included a statement as to the situation of interstate power during the year, which subject formerly appeared as a separate report. The scope of the Bulletin has also been enlarged to include a statement upon the burden of taxation.



# THE ELECTRIC LIGHT AND POWER INDUSTRY FOR THE YEAR 1930

**A**LTHOUGH the year 1930, taken as a whole, did not exhibit the same rate of growth experienced in earlier periods, the electric light and power industry again demonstrated its inherent stability and made further preparations to take full advantage of the revival of general business as soon as it shall eventuate. The principal events are summarized as follows:

## Total Electric Output Decreased Only 0.9 Per Cent

Generation of energy by public utility electric light and power plants during 1930 was 88,591,736,000 kwhr, a decrease of 1,492,692,000 kwhr or 1.7 per cent from the figure of 90,084,428,000 of the previous year. To some degree this was offset by larger imports from Canada and increased purchases from enterprises not considered electric light and power plants, so that the total energy supply showed a drop of but 800,000,000 kwhr or 0.9 per cent below 1929.

An unprecedented drought materially reduced the production of hydroelectric energy and threw an additional

load upon the steam plants, with the result that generation by fuels increased by 0.4 per cent to a record total of 59,387,027,000 kwhr, while generation by water power fell by 5.7 per cent to a total of but 29,204,709,000 kwhr, which is the smallest production since 1927.

## Fuel Efficiency Improved 5 Per Cent

The efficiency of fuel-burning plants continued to improve, reducing the average rate of fuel consumption from the equivalent of 1.67 lb. of coal per net kwhr in 1929 to 1.58 lb. in 1930, a further improvement of 5 per cent.

## Generating Capacity Increased 8.5 Per Cent

In spite of the depression, construction of power plants continued much as before. Installed capacity of generating plant reached 32,050,000 kw; an increase of 2,490,000 kw, or nearly 8.5 per cent. New construction was divided approximately as follows: 1,684,000 kw in steam, an increase of 8 per cent; 768,000 kw in hydroelectric plant, an increase of 10 per cent, and 40,000 kw in internal combustion en-

gines, an increase of 11 per cent. An interesting development of the year was the initial installation of a floating steam power plant.

The curtailment of industrial production was reflected in the decreased use made of generating capacity. All generating plants taken together, the electric light and power industry operated at an average of 32.9 per cent of capacity for the year as a whole, as compared with 36.2 per cent of capacity in 1929 and of 35.0 per cent in 1928. The "capacity factor" of water power plants decreased from 48.0 per cent in 1929 to 42.6 per cent in 1930, the lowest ratio on record.

## Increase of 1.7 Per Cent in Customers

All classes of customers increased in number by 408,550, or 1.7 per cent, making a total at the end of 1930 of 24,555,732. The number of domestic consumers stood at 20,331,550 on December 31st; an increase of 364,396, of 1.8 per cent. The number of homes served by electricity has now reached 70 per cent of the total of all homes in the United States.

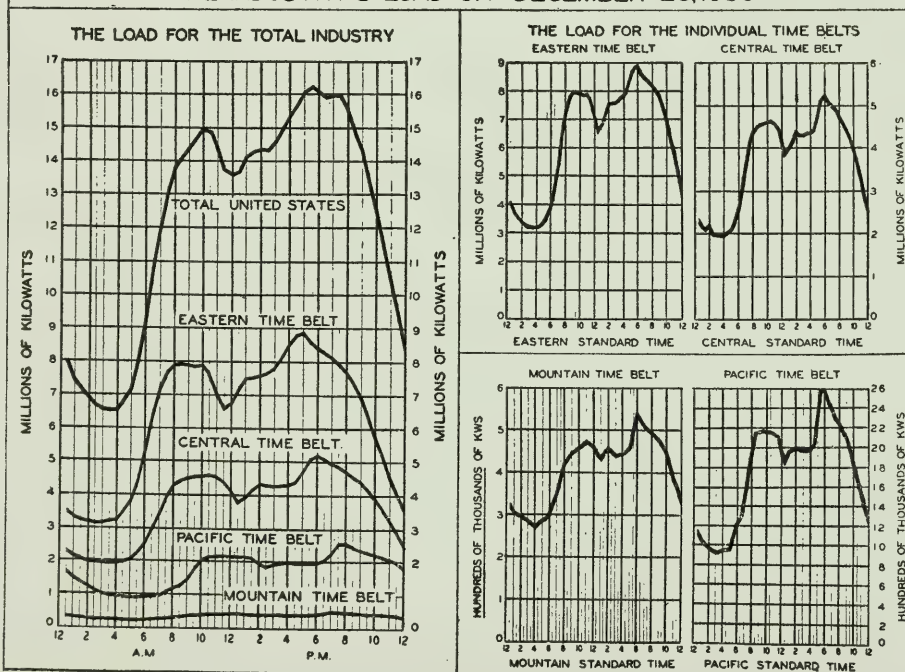
## Farm Customers Increased 15.7 Per Cent

The number of farms served by public utility enterprises stood at 644,421 at the end of 1930. This was an increase of approximately 87,550 farms, or 15.7 per cent. In three of the States (California, Massachusetts and Washington) more than one-half of the farms are so served, and the average for the entire country is now 10.2 per cent.

## Revenues Increased 2.7 Per Cent; Sales of Energy to Consumers Decreased 0.5 Per Cent

Revenues from all classes of consumers totalled \$1,990,955,000, an increase of \$52,435,000, or 2.7 per cent over the previous year. This increase compares with \$154,211,000, or 8.6 per cent for the year 1929 over 1928. The growth of 2.7 per cent in revenues for the year 1930 compares with a decline of 0.5 per cent in kwhr sold, and is explained by the fact that most of the falling off in the use of energy was

THE HOUR-BY-HOUR USE OF THE ELECTRIC POWER SUPPLY  
THE INDUSTRY'S LOAD ON DECEMBER 23, 1930





confined to large industrial power which embraced the lowest rate classifications.

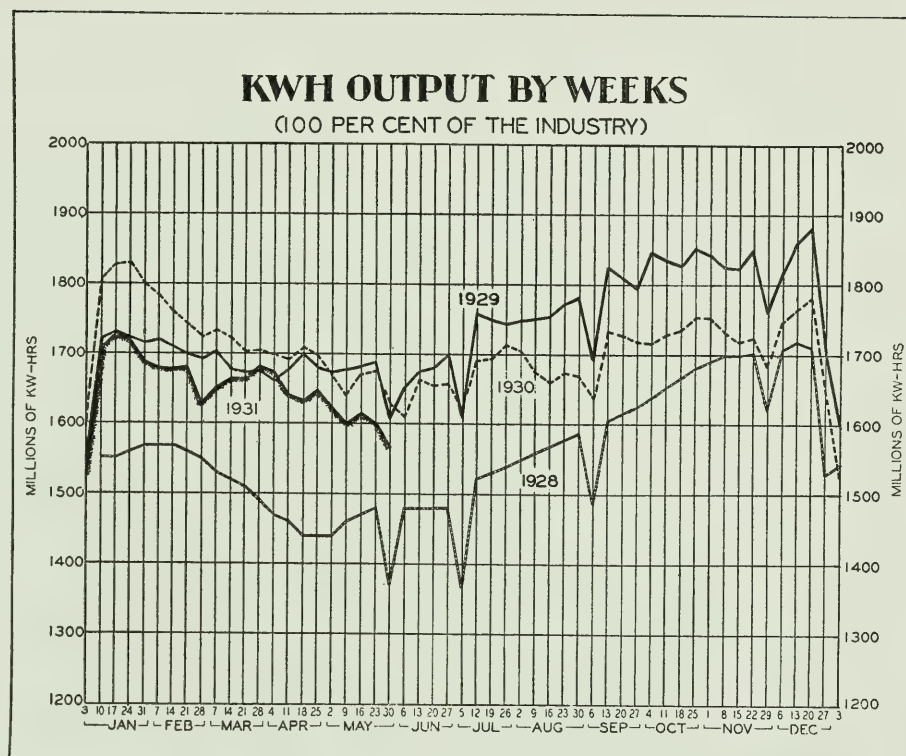
### Average Domestic Rate Reduced Nearly 5 Per Cent

The average revenue received per kwhr sold to the domestic consumer dropped from 6.33c. (revised) to 6.03c., a reduction of 0.30c. At the same time the average domestic consumer increased his use of energy from 500 kwhr per annum to 548 kwhr; an increase of 48 kwhr. As the result of the lowered average unit price, the average annual bill per customer increased from \$31.65 in 1929 to \$33.00 in 1930. While the average use of current by the domestic consumer grew during the year by 9.6 per cent, his total bill increased by only 4.3 per cent.

This reduction of 0.30c. per kwhr sold to domestic consumers, multiplied by the total sales of more than eleven billion kwhr to them, represents a saving to the housekeepers of the nation of over \$33,000,000.

### Construction Expenditures Continued as Before

Proceeding according to previously formulated plans, new construction by the electric light and power industry



continued at the same rate as the earlier, prosperous years. Total expenditures totalled \$919,418,000, as compared with \$853,000,000 during 1929.

The 1931 budget contemplates a present total of \$702,000,000, of which

231½ per cent is divided to generating facilities; 311½ per cent to transmission lines and substations; 33 per cent to distribution, and the balance, or 12 per cent, to miscellaneous items. Of the proposed total of \$164,000,000 for power plant construction, 66 per cent

TABLE I

PRINCIPAL STATISTICS OF THE DEVELOPMENT OF THE ELECTRIC LIGHT AND POWER INDUSTRY IN THE UNITED STATES DURING THE LAST 26 YEARS

	1902 U. S. Census*	1912 U. S. Census (90% of Industry*)	1922 U. S. Census (93% of Industry*)	1927 U. S. Census (100% of Industry*)	1930 N. E. L. A. (100% of Industry)	% Increase 1930 over 1922
Value of plant and equipment**.....	\$ 504,740,000	\$2,175,678,000	\$4,465,016,000	\$ 9,382,000,000†	\$12,250,000,000	174
Gross operating revenues.....	\$ 84,187,000	\$ 281,998,000	\$1,028,779,000	\$ 1,824,457,000	\$ 2,125,000,000	107
Taxes .....	\$ 2,665,005	\$ 13,147,000	\$ 73,773,000	\$ 150,825,000	\$ 195,000,000	164
Prime Movers:** steam (hp.).....	1,394,395	4,949,778	14,171,222	25,317,577	31,500,000	122
internal combustion (hp.).....	12,181	111,035	302,995	548,288	600,000	98
water power (hp.).....	438,472	2,469,231	5,822,018	9,844,263	11,600,000	99
Prime movers:** total (hp.).....	1,845,048	7,530,044	20,296,235	35,710,128	43,700,000	115
Generating capacity** (kilowatts).....	1,212,200	5,165,400	14,313,000	25,811,305	32,050,000	124
Kilowatt hours generated by fuels.....	.....	.....	.....	45,968,240,000	59,387,027,000	...
Kilowatt hours generated by water power....	.....	.....	.....	28,718,138,000	29,204,709,000	...
Total kilowatt hours generated.....	2,507,051,000	11,569,110,000	40,291,536,000	74,686,378,000	88,591,736,000	120
Number of customers:**						
Domestic and farm .....	(Separation	3,100,918	10,211,232	17,951,000†	20,331,550	99
Commercial .....	not	605,600	2,030,324	3,358,000†	3,681,080	81
Industrial .....	available)	131,000	468,312	477,000†	543,100	16
Total .....	583,000	3,837,518	12,709,868	21,786,000†	24,555,730	93
Population of the United States**.....	76,500,000	96,300,000	110,000,000	119,100,000	124,000,000	13
Population living in electric lighted homes**..	.....	14,000,000	44,000,000	75,000,000	84,500,000	92

\*In past reports to the U. S. Bureau of the Census composite companies operating both power and traction systems in many cases did not separate their light and power business from their traction business and a certain percentage of the former was therefore included in the Electric Railway Census. For that reason, in comparing these data with census reports, the percentages shown are necessary to place them on the same basis. †N.E.L.A. figures.

\*\*As of December 31st of each year. Note: 1930 financial figures are preliminary and subject to minor revisions.



is to be applied to steam stations and 34 per cent for hydro-electric plants.

### Additional Transmission Lines

Somewhat more than the usual mileage of transmission lines was placed in service during 1930. There were built 15,240 circuit miles of lines at 11,000 volts or more, bringing the total at the end of the year to approximately 200,171 miles. In 1929, a total of 11,134 miles were constructed, and 8665 miles in 1928.

### Expansion of Service Since 1922

Table I (on page 3) shows the out-

standing features of the growth of electric service in the United States. During the eight years since 1922, the population of the United States has increased by about one-eighth. At the present time, the investment in the plant and equipment of the electric light and power industry is two and a half times what it was in 1922; the number of customers is nearly twice the figure, and the production of electricity has more than doubled. Taxes, showing a growth of 164 per cent, have increased half again as much as

have the revenues out of which they must be paid.

More detailed information for the five years beginning with 1926, comprising the principal statistics gathered by the National Electric Light Association, is shown below in Table II. In order to facilitate the computation of the various annual ratios, the figures for number of customers and generating capacity have been shown as the *averages* for the year and so must not be confused with those of Table I and elsewhere, which give these figures as of the *end* of the year.

TABLE II  
PRODUCTION AND SALES OF ELECTRICITY IN RECENT YEARS

	1930	1929	1928	1927	1926
<b>KILOWATT-HOURS GENERATED</b>					
By fuel .....	59,387,027,000	59,128,131,000	49,446,510,000	46,862,526,000	44,145,965,000
By water power .....	29,204,709,000	30,956,297,000	31,006,988,000	26,381,919,000	23,843,817,000
Total kilowatt-hours generated.....	88,591,736,000	90,084,428,000	80,453,498,000	73,244,445,000	67,989,782,000
<b>ADDITIONS TO SUPPLY</b>					
Energy purchased from other sources.....	2,280,707,000	1,711,037,000	1,790,172,000	1,958,840,000	1,671,740,000
Energy purchased over International Boundaries.....	1,084,432,000	961,702,000	1,150,551,000	1,165,899,000	814,633,000
<b>DEDUCTIONS FROM SUPPLY</b>					
Energy used in Electric Railway Departments.....	1,183,714,000	1,278,832,000	1,329,527,000	1,347,990,000	1,529,330,000
Energy used in Electric and Other Departments.....	1,306,062,000	1,201,182,000	1,234,861,000	1,110,680,000	1,023,250,000
Total energy for distribution.....	89,467,099,000	90,277,153,000	80,829,833,000	73,910,514,000	67,923,575,000
Energy lost in transmission, distribution, etc.....	14,561,007,000	14,982,686,000	13,841,883,000	12,659,395,000	11,834,205,000
Kilowatt-hours sold to ultimate consumers.....	74,906,092,000	75,294,467,000	66,987,950,000	61,251,119,000	56,089,370,000
<b>NUMBER OF CUSTOMERS (AVERAGE FOR YEAR)</b>					
Domestic .....	20,149,352	19,528,518	18,520,408	17,328,777	15,991,612
Commercial—Small light and power (retail).....	3,613,384	3,565,302	3,445,316	3,256,335	3,040,959
Commercial—Large light and power (wholesale).....	541,051	519,312	473,967	425,211	382,688
Municipal street lighting.....	28,670	22,660	22,387	22,139	21,847
Street and interurban railways.....	728	815	817	819	819
Electrified steam railroads.....	24	20	20	19	19
Municipal and miscellaneous.....	18,248	13,591	6,817	7,534	10,040
Total number of ultimate consumers.....	24,351,457	23,650,218	22,469,732	21,040,834	19,447,984
<b>KILOWATT-HOURS SOLD TO ULTIMATE CONSUMERS</b>					
Domestic service .....	11,018,072,000	9,772,788,000	8,618,884,000	7,675,970,000	6,827,305,000
Commercial—Small light and power (retail).....	13,943,975,000	13,106,242,000	11,692,092,000	10,766,337,000	9,484,730,000
Commercial—Large light and power (wholesale).....	41,620,952,000	44,325,812,000	38,903,349,000	35,262,716,000	32,614,646,000
Municipal street lighting.....	2,226,545,000	2,037,809,000	1,911,379,000	1,741,436,000	1,589,135,000
Street and interurban railways.....	4,996,885,000	5,049,450,000	4,990,918,000	5,039,269,000	4,951,032,000
Electrified steam railroads.....	591,322,000	590,351,000	559,829,000	503,642,000	426,131,000
Municipal and miscellaneous.....	508,341,000	412,015,000	311,499,000	261,749,000	196,391,000
Total to ultimate consumers.....	74,906,092,000	75,294,467,000	66,987,950,000	61,251,119,000	56,089,370,000
<b>REVENUE FROM ULTIMATE CONSUMERS</b>					
Domestic service .....	\$ 664,441,200	\$ 618,798,800	\$ 571,619,800	\$ 523,688,800	\$ 478,181,800
Commercial—Small light and power (retail).....	575,598,100	555,640,400	519,957,100	482,135,900	427,407,300
Commercial—Large light and power (wholesale).....	590,992,100	613,171,400	549,988,900	519,074,500	488,914,800
Municipal street lighting.....	95,458,300	88,323,400	83,024,400	77,248,200	68,023,400
Street and interurban railways.....	46,067,600	46,277,400	46,488,700	47,965,000	47,617,800
Electrified steam railroads.....	6,015,400	5,986,300	5,559,800	5,172,000	4,372,500
Municipal and miscellaneous.....	12,382,400	10,322,500	7,670,400	5,747,600	5,641,400
Total from ultimate consumers.....	\$1,990,955,100	\$1,938,520,200	\$1,784,309,100	\$1,661,032,000	\$1,520,159,000
<b>KILOWATT GENERATING CAPACITY (AVERAGE FOR YEAR)</b>					
Steam .....	22,585,330	20,693,700	19,331,728	17,877,748	16,677,000
Internal combustion .....	396,141	336,014	See Steam	See Steam	See Steam
Water power .....	7,822,807	7,359,935	6,917,655	6,324,938	6,100,000
Total .....	30,804,278	28,389,649	26,249,383	24,202,686	22,777,000



## FARM SERVICE

Table IV shows the kwhr sold and revenues received from all farms purchasing electricity during 1930. These figures have been arrived at by extending the figures of the reporting companies so as to embrace an estimated 100 per cent of the entire industry. It may properly be considered the first attempt to arrive at a national figure for the use of electricity in agriculture, and it is subject to some revision upon the eventual publication of the various statistics of the 1929 Census of Agriculture.

Because irrigation pumping in certain regions of the United States is an item of such magnitude as to mask completely all other farm uses, both as to amounts used per farm and prices per kwhr, Table IV has been set up in two divisions, the second one only being representative of the average

performance of the average farm.

Roughly speaking, farms lying west of the hundredth meridian were thrown into the category affected by irrigation. The division is entirely arbitrary and very roughly drawn. Possibly less than one fifth of the farms in the irrigation States do actual pumping, but statis-

tics are not available to make a more accurate separation.

The figures for the average farm east of the 100th meridian are comparable with those reported in 1929 and have the same general trends shown by domestic service. A comparison between these two years may be made as follows:

TABLE IV  
FARM SERVICE

Reported Figures Extended to Embrace Entire Electric Light and Power Industry

	Number of farms Served (Dec. 31, 1930)	Kw.-hr. Sold	Revenue
In States West of the 100 Meridian (Affected by irrigation pumping)	200,962	1,475,911,000	\$25,278,400
In States East of the 100 Meridian (not affected by irrigation).....	443,459	304,036,000	20,909,200
Total all farm service.....	644,421	1,779,947,000	\$46,187,600

Note: In the preparation of Tables II and III (commercial statistics—sales of electricity), farm service not involving irrigation, as set out above, has been included in "domestic service" while farm service involving irrigation has been included in "commercial service—large light and power (wholesale)."

The Average Electrified Farm, 1930

	Kw.-hrs. Sold Per Customer	Ave. Annual Bill	Revenue Per Kw.-hr.
In States West of the 100 Meridian (Affected by irrigation pumping)	7,768	\$132.83	1.71c.
In States East of the 100 Meridian (Not affected by irrigation).....	740	50.91	6.88c.

TABLE V  
THE AVERAGE ELECTRIC CONSUMER

Class of Service	In 1930				In 1929			
	Average Number of Consumers	Average per Consumer Sales, Kw.-hr.	Revenue	Average Revenue per Kw.-hr.	Average Number of Consumers	Average per Consumer Sales, Kw.-hr.	Revenue	Average Revenue per Kw.-hr.
Domestic (all uses).....	20,150,000	548	\$ 33	6.03c.	19,528,500	500	\$ 32	6.33c.
Commercial:								
Small light and power (retail).....	3,615,000	3,860	160	4.13	3,565,300	3,675	156	4.24
Large light and power (wholesale).....	541,000	77,000	1,078	1.43	519,300	85,350	1,180	1.38
Total commercial .....	4,156,000	13,375	\$ 281	2.10c.	4,084,600	14,050	\$ 286	2.04c.
Railways .....	750	.....	.....	0.93	835	.....	.....	0.93
Municipal and miscellaneous (a).....	46,900	.....	.....	3.94	36,250	.....	.....	4.03
All ultimate consumers.....	24,350,000	3,080	\$ 82	2.66c.	23,650,000	3,180	\$ 82	2.57c.

(a) Including street lighting.

TABLE III  
COMMERCIAL STATISTICS—SALES OF ENERGY—1930

Sales to Ultimate Consumers	Number of Customers	Kw.-hr. Sold	Revenue
Domestic service .....	20,331,551	11,018,072	\$664,441,200
Commercial service:			
(a) Small light and power (retail).....	3,628,653	13,943,975	575,598,100
(b) Large light and power (wholesale).....	542,434	41,620,952	590,992,100
Municipal street lighting .....	34,572	2,226,545	95,458,300
Railroads—motive power:			
(a) Street and interurban railways.....	640	4,996,885	46,067,600
(b) Electrified steam railroads.....	28	591,322	6,015,400
Municipal and miscellaneous.....	17,854	508,341	12,382,400
Total to ultimate consumers.....	24,555,732	74,906,092	\$1,990,955,100



somewhat more than 5 per cent. In spite of the fact that more electricity was produced by steam than ever before, the actual consumption of fuel showed a decline of more than 2,000,000 tons of coal, or its equivalent. This amounts to a decrease of more than 4 per cent. Both coal and oil showed a marked decline, but the use of natural gas showed an increase of nearly eight billion cubic feet, or approximately 7 per cent.

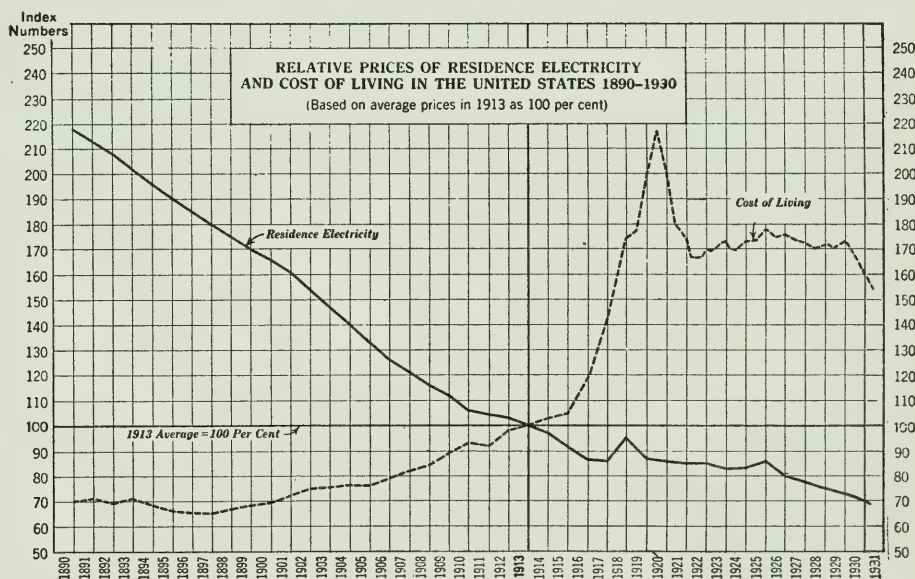
TABLE VI  
FUEL USED FOR ELECTRICAL  
GENERATION, 1930

Coal (anthracite and bituminous in short tons) .....	39,721,000
Oil (in 42 gal. bbls.) .....	8,966,000
Gas (in 1000 cu. ft.) .....	120,180,000
Total fuel (including small amounts of other miscellaneous fuels not shown above) in equivalent short tons of coal..	46,893,000
Energy generated by use of fuels —net kw-hr. ....	59,387,027,000
Pounds of coal (or its equivalent) per kw-hr. ....	1.58

## DOMESTIC SERVICE

An outstanding event of the year has been the steady and consistent growth in the use of domestic electric service. Employment of electricity in the home has thus far reflected little of the present hard times and the regular gain in the revenues from this branch has helped to offset, to a large degree, the loss of business in industrial power.

The increase in the number of domestic consumers in 1930 was but 1.8 per cent, as compared with 4.6 per cent in 1929 and 6.3 per cent in 1928. In actual number of new customers this gain was the smallest since pre-war



days and in the rate of growth it was the lowest figure in the history of the industry. The degree of saturation of wired homes in all urban areas is very high and future growth in their numbers must, therefore, depend on new residential building or else upon the further extension of service into rural territory.

At the same time, the slackened rate of increase in the number of new customers has been completely offset by the steadily enlarged consumption *per customer*. This reached an annual total of 548 kw-hr. at the end of 1930, an increase of 48 kw-hr. over the figure for the previous year.

## More Service for Less Money

Coincidentally with the increase in use, the average unit price has declined and at the end of the year stood at 6.03 cents per kw-hr., as compared with 6.33 cents at the close of 1929. The average domestic consumer in 1930 increased his use of electricity by 9.6 per cent while his average rate decreased by 4.8 per cent. As the result of these partly balancing factors, his annual bill increased by only \$1.35 during the year, although he used 48 more kw-hrs. of energy.

In the period covered by the decade, the average domestic consumer has increased his use of electricity by 62 per cent while his annual bill has grown by but 31 per cent. The total savings to consumers resulting from lower average prices during the decade has been \$430,000,000.

Table VII shows the significant figures for domestic electric service during recent years and the two charts give the general trends since pre-war days. (Note: During March, 1931, the average price of domestic service declined below six cents and these charts reflect the latest available figures on this subject.)

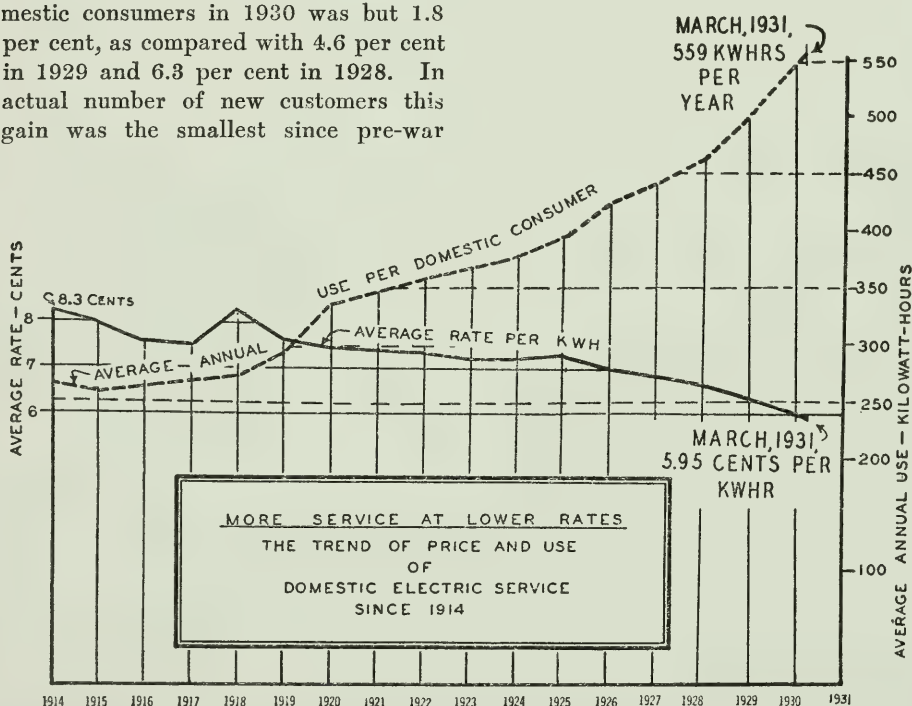


TABLE VII  
DOMESTIC ELECTRIC SERVICE

Year	Average Use Kw-hr.	Average Price Paid Per Kw-hr.	Average Annual Bill
1914	268	8.3	\$22.25
1922	359	7.4	26.50
1926	427	7.0	29.89
1927	443	6.8	30.29
1928	463	6.6	30.76
1929	500	6.3	31.65
1930	548	6.03	33.00



## NEW CONSTRUCTION

Table IX gives the distribution of the actual construction expenditures for 1930 and the budget for 1931 as it stood around the first of April of this year. In spite of the depression, more money than ever before was spent by the electric light and power industry for the extension and improvement of its facilities. The total increase in generating capacity during the year was 2,490,000 kw, making the average expenditure per kw increase in capacity \$369, as compared with \$365 in 1929 and \$387.50 in 1928.

The decrease in the proposed expenditures for 1931 is caused to some extent by the decline in the price of materials and in the costs of construction, so that the actual physical volume of new work more nearly approximates the general average of previous years than the figures would seem to indicate.

The large expenditure going into distribution shows that the electric light and power companies are engaged in extensive programs in building up and extending distribution facilities to take care of existing increased demands, to provide for the much heavier demands anticipated, and to improve the standards of service. The heavy capital expenditures required to distribute electricity necessitate long range planning of from five to ten years and systematic construction programs. The growth of the domestic load, indicating as it does uses per customer ten years hence of 1000 to 2000 kwhr per annum, explains to a considerable extent these heavy expenditures now going into distribution plant.

TABLE VIII  
MILES OF TRANSMISSION LINES, BY VOLTAGES  
YEARS 1926-1930 INCLUSIVE

Total Circuit Miles of Transmission Lines (100% of Industry)						
Voltage	Per Cent of Total					
	1930	1930	1929	1928	1927	1926
220,000	1,811	0.9	1,454	1,454	1,268	1,066
132,000	6,929	3.5	5,891	5,424	4,704	4,131
110,000	16,147	8.1	14,190	12,698	12,207	11,320
66,000	26,896	13.4	24,741	22,519	20,183	16,713
60,000	10,573	5.3	10,225	10,165	9,895	9,340
44,000	11,248	5.6	10,585	10,095	9,784	8,747
33,000	38,501	19.2	35,597	34,857	32,243	30,671
22,000	17,208	8.6	16,106	14,978	13,987	13,551
13,200*	28,116	14.0	25,989	24,489	24,125	23,098
All others						
over 11,000	28,971	14.5	28,838	26,230	26,695	24,397
11,000	13,771	6.9	11,315	10,888	10,041	8,913
Total	200,171	100.0	184,931	173,797	165,132	151,947

\*Also includes 13,000 volts.

## Distribution of Total by Voltage Groups

	1930	1929	1928	1927	1926
220,000 or more.....	1,811	1,454	1,454	1,268	1,066
110,000 but less than 220,000.....	25,705	22,588	20,448	16,170	17,309
66,000 but less than 110,000.....	30,566	28,166	25,908	24,791	19,728
33,000 but less than 66,000.....	66,870	62,881	61,003	59,934	54,355
11,000 but less than 33,000.....	75,219	69,842	64,984	62,969	59,489
Total .....	200,171	184,931	173,797	165,132	151,947

## Transmission Lines

In spite of the business deflation, the year 1930 witnessed the largest mileage of transmission line construction in recent years, a total of 15,240 circuit miles having been put into service. This compares with an increase of 11,134 in 1929, which was approximately the average annual growth during this decade.

Table VIII shows the total circuit miles of transmission lines in service at the close of each year since 1926,

grouped according to their major classifications. The figures for earlier years are somewhat higher than those shown in previous Bulletins because of the upward revision made in conformity with the results published by the 1927 Census of Central Electric Light and Power Stations.

Of the voltages in common use, the largest gain during the year is shown by the 33,000 volt classification, which still comprises nearly one-fifth of the total mileage.

TABLE IX  
CONSTRUCTION EXPENDITURES FOR 1929 AND BUDGET FOR 1930  
(Total Electric Light and Power Industry)

	1931	Gross Construction Expenditures				
	Budget	1930	1929	1928	1927	1926
Steam Generating Stations.....	\$110,479,000	\$176,496,000	\$188,211,000	\$136,500,000	\$156,360,000	\$189,058,000
Hydro Generating Stations.....	53,772,000	117,565,000	51,120,000	56,300,000	69,268,000	47,399,000
Substations .....	97,701,000	123,482,000	119,839,000	118,000,000	118,877,000	121,019,000
Transmission .....	124,011,000	139,533,000	145,064,000	129,100,000	140,573,000	115,946,000
Distribution .....	232,935,000	258,699,000	260,751,000	219,800,000	219,962,000	206,209,000
Miscellaneous Electric .....	83,020,000	103,642,000	88,045,000	93,800,000	88,704,000	92,884,000
Total .....	\$701,918,000	\$919,417,000	\$853,030,000	\$753,500,000	\$793,744,000	\$772,515,000



## The Growth of the Tax Burden on the Electric Light and Power Industry

The mounting burden of taxes being placed upon the electric light and power companies in the United States is cause for serious reflection. In a quarter of a century the percentage of revenue paid as taxes has approximately trebled and new tax proposals promise no abatement of this tendency.

The following table shows the growth of taxes paid by electric light and power companies in the United States as compared to the growth of total revenues and net operating revenues.

per cent while in 1929 total taxes amounted to one-third of the gross revenue from domestic service.

In comparing the performance of municipal light and power enterprises, it has been insisted that taxes are a negligible factor and may be excluded from the comparison. How far this is from the truth may be shown by the following illustration.

Suppose governmental authorities should conclude that because of the importance of a low electric rate to the domestic consumer all electric light and

power companies should be relieved of all taxation and directed to apply all money now being paid in taxes to the reduction of rates for domestic service. The average domestic rate of the nation, which is now approximately 6.0c. per kilowatt-hour, would thereby be reduced to approximately 4.0c. per kilowatt-hour. Such is the present advantage granted the municipal power systems through tax exemption, for the municipal plant, generally speaking, passes all its tax exemption advantage on to the voting domestic consumer. This tax exemption is far from a negligible factor, as is obvious from the ratio of 4.0c. to 6.0c.

Since taxes are raised to bear the cost of government, the granting of an exemption to one party accomplishes no reduction whatsoever in the total taxes to be raised but merely transfers more of the tax burden to other private enterprise to stultify its development and reduce the opportunities for employment. This taxing of electric light and power companies and the exemption, except to a very limited degree, of municipal power plants is one of the unfair and unsound results of placing government into competition with business.

TABLE X  
RELATION OF TAXES TO GROSS AND NET INCOME

Year	Total Taxes Paid by Companies	Out of Every Dollar of Consumer Revenue Taxes Take (a)	Out of Every Dollar of Investor's Income Taxes Take (b)
1902	\$2,654,885	3.4 cents	8.7 cents
1907	6,345,796	4.2 "	9.0 "
1912	13,117,198	5.2 "	10.8 "
1917	29,897,106	6.9 "	15.5 "
1922	73,128,440	8.4 "	18.6 "
1926	140,400,000	9.3 "	20.3 "
1927	157,000,000	9.4 "	20.0 "
1928	178,000,000	9.9 "	20.4 "
1929	187,500,000	9.7 "	19.6 "

Notes: (a) Ratio of total tax payments to total revenues from consumers.  
(b) Ratio of total tax payments to net operating revenues before payment of taxes.

Table XI gives a comparison of the total taxes paid by the electric light and power companies with their total revenues from domestic electric service, covering the period from 1912 to 1929 for which figures are available. Gross revenue from domestic service during that period has increased approximately 650 per cent but taxes in the same period have increased 7000 per cent or more than ten times as fast. The table shows that the ratio of total taxes to total revenue from domestic service in 1912 was only 4

TABLE XI  
RELATION OF TAXES TO DOMESTIC ELECTRIC SERVICE

Year	Total Taxes Paid by Companies	Revenues from Domestic Elec. Service (Companies Only)	Ratio of Taxes Paid to Gross Revenue from Domestic Service
1912	\$2,654,885	\$74,000,000	4 per cent
1917	29,897,106	108,000,000	28 " "
1922	73,128,440	256,000,000	29 " "
1926	140,400,000	432,000,000	32 " "
1927	157,000,000	474,000,000	33 " "
1928	178,000,000	518,000,000	34 " "
1929	187,500,000	561,000,000	33 " "



## Interstate Transfer of Electric Power

In 1930, the total amount of electricity available for distribution to the consumers of light and power was 90,870,000,000 kw-hr., exclusive of the energy imported from Canada. Of this amount, 78,972,000,000 kw-hr., or 86.9 per cent, was generated and consumed within the same state. The remaining 13.1 per cent of the total for the country (or 11,898,000,000 kw-hr.) was transferred across state lines.

This compares with the total of 10,856,000,000 kw-hr. crossing state lines in 1929, (as shown by the N. E. L. A. Report, Statistical Bulletin No. 5) which was 11.8 per cent of the total available for distribution in that year.

The year 1930 was a very unusual one insofar as the production of electricity was concerned. Much of the eastern half of the United States experienced the most serious drought in the history of the country, causing a great reduction in the production of electricity in many of the waterpower plants and its replacement by steam plants elsewhere. The result was a further shifting in the flow of energy, a decrease in the percentage of power moving across state lines in some cases and a very marked increase in others.

The largest factor in the increase in the total amount of power crossing state lines in 1930 has been the output of two power plants. The State Line, Indiana, plant operated for a full year and exported the bulk of its power to the Chicago, Illinois, industrial area. The Deepwater, New Jersey, plant began operations during the summer and exported most of its production to Pennsylvania and Delaware. The exports of these two enterprises constituted three-quarters of the entire numerical increase in interstate power during the year. Except for these items, no significant changes were visible in other geographic divisions.

As has been pointed out in previous reports, the greater part of all interstate power has always been accounted for by a comparatively small number of generating plants located by the accident of geography across state boundaries from the markets for which their power was intended. During the year their number was augmented by two (Fifteen-Mile Falls on the upper Connecticut River between New Hampshire and Vermont and Deepwater on

TABLE XII  
INTERSTATE TRANSFER OF ELECTRICITY—1930

		Interstate Power			Per Cent of Consumption 1929†	Per Cent of Consumption 1928††
		Total Con- sumption of Electricity* (Million Kw-hr.)	Imported into State (Million Kw-hr.)	Per Cent of Consumption		
Total United States**	90,870	11,898	13.1	11.8	10.7	
Maine .....	702	1	0.1	0.2	0.1	
New Hampshire .....	302	21	7.0	6.0	3.9	
Vermont .....	178	13	7.3	10.7	11.3	
Massachusetts .....	2,980	750	25.2	19.4	18.8	
Rhode Island .....	558	242	43.4	25.9	25.0	
Connecticut .....	1,213	101	8.2	7.5	9.5	
New England.....	5,933	1,128	19.0	14.4	14.5	
New York ** .....	11,654	91	0.8	0.6	0.5	
New Jersey .....	2,743	371	13.5	19.0	12.0	
Pennsylvania .....	9,060	2,156	23.8	23.0	17.6	
Delaware .....	150	135	90.4	66.2	32.0	
Maryland and D. C.....	1,619	325	20.0	24.2	41.8	
Middle Atlantic**...	25,226	3,078	12.2	12.4	9.7	
Ohio .....	5,868	337	5.8	8.5	10.1	
Indiana .....	2,188	337	15.4	10.5	11.9	
Illinois .....	7,150	1,182	16.5	9.1	4.5	
Michigan .....	4,052	151	3.8	2.2	2.0	
Wisconsin .....	2,074	227	11.0	8.5	7.0	
East North Central..	21,332	2,235	10.5	7.6	6.5	
Minnesota .....	1,413	296	21.0	25.9	31.5	
Iowa .....	1,077	50	4.6	5.2	6.0	
Missouri .....	2,346	1,119	47.7	47.5	51.6	
North Dakota .....	110	4	3.8	7.1	8.9	
South Dakota .....	121	12	10.1	9.1	8.9	
Nebraska .....	537	....	...	0.4	0.3	
Kansas .....	862	42	4.8	4.5	5.1	
West North Central..	6,467	1,524	23.6	25.1	27.8	
Virginia .....	1,170	192	16.4	11.9	7.3	
West Virginia .....	1,490	385	25.8	31.6	23.7	
North Carolina .....	2,482	484	19.5	27.3	32.7	
South Carolina .....				1.6	0.6	
Georgia .....	1,334	515	38.7	27.2	28.5	
Florida .....	681	25	3.6	3.2	2.9	
South Atlantic .....	7,157	1,601	22.4	20.0	19.6	
Kentucky .....	793	215	27.2	32.0	32.2	
Tennessee .....	1,094	323	29.5	8.0	1.2	
Alabama .....	1,387	50	3.6	4.5	0.6	
Mississippi .....	282	215	76.2	73.6	47.9	
East South Central..	3,556	804	22.6	15.3	9.0	
Arkansas .....	446	348	78.0	64.1	27.6	
Louisiana .....	692	70	10.1	6.0	3.4	
Oklahoma .....	1,049	139	13.3	9.1	17.1	
Texas .....	2,915	27	0.9	0.4	0.1	
West South Central..	5,102	584	11.4	8.6	6.3	
Montana .....	1,324	....	...	0.4	...	
Idaho .....	456	120	26.4	26.7	21.9	
Wyoming .....	72	1	1.8	...	...	
Colorado .....	524	....	...	0.4	...	
New Mexico .....	84	10	11.5	14.5	7.4	
Arizona .....	402	11	2.7	1.4	2.7	
Utah .....	742	449	60.5	64.9	54.7	
Nevada .....	87	47	54.7	43.3	55.4	
Mountain .....	3,691	639	17.3	17.8	16.4	
Washington .....	2,505	92	3.7	4.2	5.6	
Oregon .....	1,088	84	7.7	4.0	8.7	
California .....	8,813	130	1.5	0.6	...	
Pacific .....	12,406	307	2.5	1.6	1.8	

Notes: \* "Consumption" is here defined as the sum total of electricity available for distribution to all consumers of light, heat and power. It is derived as follows:

Generated by electric light and power plants.....

Add: Procured from enterprises not public utilities.....

Add: Imported from adjacent States.....

Total.....

Subtract: Exported to adjacent States.....

Balance: "Consumption" in State.....

\*\*Not including electricity imported from Canada.

†N E L A Statistical Bulletin No. 5.

††N E L A Statistical Bulletin No. 4.



the Delaware opposite Wilmington and the Philadelphia industrial district). The output of the 33 plants in this category accounted for 6,800,000,000 kw-hr. during 1930, or 57 per cent of all power moving across state lines. In the tables of exports and imports, practically all of the high percentages are the result of the operations of these few plants.

In many of the states, the interchange of power across state lines shows an approximate balance between imports and exports. Of the remainder with but few exceptions, the large export states are those within which one or more of the interstate power plants of Table XV are located. Conversely, the states whose markets are served by these plants reflect a high import ratio. This is illustrated by Table XIII which shows those states where net exports or net imports of power exceeded 100,000,000 kw-hr. in 1930.

TABLE XIII

Net Interstate Power Transfer in Order of Magnitude; States Exporting or Importing More Than 100,000,000 kw-hr. in 1930

Exporting States		
State	Net Exports (Million Kw-hr.)	Per Cent of Generation*
Maryland & D. C. ...	760	31.9
Indiana .....	720	24.8
Alabama .....	650	31.9
West Virginia .....	533	26.4
Iowa .....	459	30.0
Louisiana .....	375	35.2
Idaho .....	372	45.0
Vermont .....	326	67.8
Kansas .....	143	14.2
Oregon .....	133	10.9
New Jersey .....	123	4.3
Wisconsin .....	112	5.1
Ohio .....	110	1.9
Importing States		
State	Net Imports (Million Kw-hr.)	Per Cent of Consumption
Pennsylvania .....	1,183	13.1
Missouri .....	1,077	45.9
Utah .....	447	60.3
Massachusetts .....	426	14.2
Arkansas .....	326	73.2
Georgia .....	311	24.8
Illinois .....	287	4.0
Tennessee .....	247	19.1
Minnesota .....	220	15.6
Mississippi .....	215	76.1
Delaware .....	131	87.8
Kentucky .....	105	13.2

Note: \*Includes electricity procured from enterprises not considered electric light and power plants.

TABLE XIV  
EXPORTS OF INTERSTATE POWER BY  
ELECTRIC LIGHT & POWER COMPANIES—UNITED STATES, 1930

	Power Generated* (Millions Kw-hr.)	Power Exported (Millions Kw-hr.)	Exported Power Is Per Cent of Generation	Per Cent of Consumption 1929†	Per Cent of Consumption 1928††
<b>Total United States...</b>	<b>90,870</b>	<b>11,898</b>	<b>13.1</b>	<b>11.8</b>	<b>10.7</b>
Maine .....	702	1	...	...	...
New Hampshire .....	376	96	25.4	16.5	25.8
Vermont .....	504	339	67.4	64.6	71.9
Massachusetts .....	2,574	344	13.4	10.6	10.9
Rhode Island .....	548	232	42.3	30.5	2.1
Connecticut .....	1,201	88	7.4	2.0	2.7
<i>New England</i> .....	<i>5,906</i>	<i>1,100</i>	<i>19.0</i>	<i>13.8</i>	<i>13.1</i>
New York .....	11,695	133	1.1	1.2	1.8
New Jersey .....	2,866	494	17.2	0.8	1.4
Pennsylvania .....	7,878	973	12.4	13.9	11.2
Delaware .....	18	4	21.5	7.6	14.7
Maryland and D. C. ....	2,379	1,085	45.6	54.0	49.5
<i>Middle Atlantic</i> .....	<i>24,836</i>	<i>2,689</i>	<i>10.8</i>	<i>10.7</i>	<i>9.1</i>
Ohio .....	5,978	447	7.5	7.8	6.6
Indiana .....	2,908	1,057	36.3	21.3	7.7
Illinois .....	6,863	894	13.0	9.7	10.5
Michigan .....	4,046	145	3.6	2.6	1.5
Wisconsin .....	2,186	339	15.5	18.4	21.0
<i>East North Central</i> ..	<i>21,981</i>	<i>2,883</i>	<i>13.2</i>	<i>9.9</i>	<i>8.4</i>
Minnesota .....	1,193	76	6.4	6.4	7.3
Iowa .....	1,536	509	33.1	38.7	45.1
Missouri .....	1,269	42	3.3	3.7	4.0
North Dakota .....	125	19	15.4	13.3	15.3
South Dakota .....	114	5	4.5	7.4	2.9
Nebraska .....	579	42	7.3	8.3	9.3
Kansas .....	1,005	185	18.4	17.7	15.4
<i>West North Central</i> ..	<i>5,821</i>	<i>878</i>	<i>15.1</i>	<i>16.8</i>	<i>19.9</i>
Virginia .....	1,238	260	21.0	22.3	19.0
West Virginia .....	2,023	918	45.4	54.0	46.2
North Carolina .....	2,468	470	19.0	27.3	32.7
South Carolina .....				1.6	0.6
Georgia .....	1,022	203	19.9	11.7	8.6
Florida .....	681	25	3.7	3.6	3.0
<i>South Atlantic</i> .....	<i>7,432</i>	<i>1,876</i>	<i>25.2</i>	<i>26.5</i>	<i>25.4</i>
Kentucky .....	688	110	16.0	16.1	11.8
Tennessee .....	846	76	9.0	2.3	2.9
Alabama .....	2,037	700	34.4	21.9	25.0
Mississippi .....	67	...	...	1.7	2.0
<i>East South Central</i> ..	<i>3,638</i>	<i>887</i>	<i>24.4</i>	<i>15.0</i>	<i>15.3</i>
Arkansas .....	119	21	17.9	13.7	14.7
Louisiana .....	1,067	445	41.7	39.2	32.1
Oklahoma .....	958	48	5.1	3.7	1.9
Texas .....	3,011	123	4.1	3.1	1.9
<i>West South Central</i> ..	<i>5,156</i>	<i>637</i>	<i>12.4</i>	<i>10.8</i>	<i>8.5</i>
Montana .....	1,328	4	0.3	0.3	0.2
Idaho .....	828	493	59.5	62.2	67.5
Wyoming .....	71	...	...	...	...
Colorado .....	530	6	1.1	1.0	1.0
New Mexico .....	78	4	4.8	4.5	9.6
Arizona .....	392	...	...	...	...
Utah .....	295	1	0.4	0.3	...
Nevada .....	43	4	9.7	6.8	5.6
<i>Mountain</i> .....	<i>3,564</i>	<i>512</i>	<i>14.4</i>	<i>13.7</i>	<i>15.7</i>
Washington .....	2,540	127	5.0	9.5	5.2
Oregon .....	1,221	218	17.8	13.3	12.4
California .....	8,774	91	1.0	0.8	0.5
<i>Pacific</i> .....	<i>12,536</i>	<i>436</i>	<i>3.5</i>	<i>3.8</i>	<i>2.6</i>

Notes: \*Includes electricity procured from enterprises not considered electric light and power plants.

†N. E. L. A. Statistical Bulletin No. 5.

††N. E. L. A. Statistical Bulletin No. 4.



**TABLE XV**  
**IMPORTANT GENERATING PLANTS—SEPARATED BY STATE LINES FROM THE POWER**  
**MARKETS FOR WHICH THEY WERE BUILT IN WHOLE OR IN PART. 1930.**

Name of Plant	Date of Original Installation	Located in State	Supplies Market of	Per Cent of Total Interstate Power Supplied from Each Group—1930
<b>WATER POWER PLANTS</b>				
Fifteen Mile Falls.....	1930	New Hampshire	Industrial Massachusetts	3.5
Vernon .....	1909	New Hampshire		
Davis Bridge .....	1924	Vermont		
Bellows Falls .....	1928	Vermont		
Holtwood .....	(1st Unit 1910) (Last Unit 1914)	Pennsylvania	Southern Pa. and Baltimore, Md.	2.5
Conowingo .....	1928	Maryland	Philadelphia, Pa.	8
Lake Lynn .....	1926	West Virginia	Pittsburgh, Pa., District	0.5
Catawba .....	1904	South Carolina	Industrial Piedmont Region of North Carolina	2.5
Dearborn .....	1922			
Fishing Creek .....	1916			
Rocky Creek .....	1909			
Wateree .....	1921			
Keokuk .....	1906	Iowa	St. Louis, Mo., Industrial Area	4
Jim Falls .....	1923	Wisconsin	St. Paul-Minneapolis, Minn.	2
Wissota .....	1923			
St. Croix Falls.....	1910			
Cove .....	1917	Idaho	Salt Lake City, Utah	1.5
Grace .....	1908			
Oneida .....	1915			
Soda .....	1924			
American Falls .....	1927	Idaho	Salt Lake City, Utah	2
Bishop Creek Plants.....	1905	California	Nevada mines at Manhattan, Goldfield, etc.	0.5
Bartlett's Ferry .....	1926	Alabama	Columbus, Ga.	1.5
Youghiogheny .....	1927	Maryland	Pennsylvania mines	0.5
Chalk Hill Rapids.....	1927	Michigan	Wisconsin	
TOTAL WATER POWER .....				29%
<b>STEAM POWER PLANTS</b>				
State Line .....	1929	Indiana	Chicago Industrial Area	7
Sterlington .....	1927	Louisiana	Southern Ark. and Western Miss.	3
Montaup .....	1927	Massachusetts	Rhode Island	1
Lowellville .....	Before 1905	Ohio	Sharon-Mahoning Valleys, Pa.	2
Windsor .....	1917	West Virginia	Ohio Industrial district, Pitts- burgh region, Pa.	5.5
Cahokia .....	1926	Illinois	St. Louis, Mo.	5.5
Glen Lyn .....	1927	Virginia	West Virginia Coal Mines	1.5
Deepwater .....	1930	New Jersey	Philadelphia, etc., district	2.5
TOTAL STEAM POWER .....				28%
GRAND TOTAL; PROPORTION OF TOTAL INTERSTATE POWER.....				57%

#### SUMMARY

TOTAL INTERSTATE POWER is to total electric supply—13.1%.  
 Percentage of TOTAL INTERSTATE POWER contributed by the above thirty-three plants—57%.  
 Percentage of TOTAL ELECTRIC SUPPLY contributed by these plants—7.5%.

TABLE XVI  
GENERATING CAPACITY IN KILOWATTS  
AS OF DECEMBER 31, 1930

	Steam	Water Power	Internal Combustion	Total
<b>Total United States</b>	<b>23,427,058</b>	<b>8,206,732</b>	<b>416,129</b>	<b>32,049,919</b>
Maine .....	70,670	205,956	812	277,438
New Hampshire .....	42,005	211,163	1,400	254,568
Vermont .....	14,860	160,418	.....	175,278
Massachusetts .....	981,335	128,860	3,065	1,113,260
Rhode Island .....	241,200	1,750	.....	242,950
Connecticut .....	469,040	77,405	480	546,925
<b>Total New England.....</b>	<b>1,819,110</b>	<b>785,552</b>	<b>5,757</b>	<b>2,610,419</b>
New York .....	3,062,235	1,006,062	9,568	4,077,865
New Jersey .....	906,665	950	1,740	909,355
Pennsylvania .....	2,308,670	216,650	9,841	2,535,161
<b>Total Middle Atlantic.....</b>	<b>6,277,570</b>	<b>1,223,662</b>	<b>21,149</b>	<b>7,522,381</b>
Ohio .....	2,242,366	12,675	2,360	2,257,401
Indiana .....	871,120	34,820	3,807	909,747
Illinois .....	2,269,234	46,240	4,565	2,320,039
Michigan .....	1,285,095	215,715	6,857	1,507,667
Wisconsin .....	568,189	247,143	6,988	822,320
<b>Total East North Central.....</b>	<b>7,236,004</b>	<b>556,593</b>	<b>24,577</b>	<b>7,817,174</b>
Minnesota .....	279,064	130,766	8,754	418,584
Iowa .....	375,864	152,003	21,317	549,184
Missouri .....	570,952	12,800	23,682	607,434
North Dakota .....	53,645	.....	3,650	57,295
South Dakota .....	44,958	4,200	12,355	61,513
Nebraska .....	192,734	10,546	23,416	226,696
Kansas .....	325,822	7,582	36,794	370,198
<b>Total West North Central.....</b>	<b>1,843,039</b>	<b>317,897</b>	<b>129,968</b>	<b>2,290,904</b>
Delaware .....	31,350	.....	915	32,265
Maryland .....	338,160	271,985	2,622	612,767
District of Columbia .....	178,000	.....	.....	178,000
Virginia .....	335,204	85,402	5,201	425,807
West Virginia .....	463,122	56,305	4,137	523,564
North Carolina .....	341,195	346,500	3,404	691,099
South Carolina .....	147,398	536,155	520	684,073
Georgia .....	134,969	275,762	2,035	412,766
Florida .....	324,173	14,450	25,385	364,008
<b>Total South Atlantic.....</b>	<b>2,293,571</b>	<b>1,586,559</b>	<b>44,819</b>	<b>3,924,949</b>
Kentucky .....	218,772	105,160	8,602	332,534
Tennessee .....	205,525	128,698	2,978	337,201
Alabama .....	238,500	411,522	3,951	653,973
Mississippi .....	42,747	.....	11,984	54,731
<b>Total East South Central.....</b>	<b>705,544</b>	<b>645,380</b>	<b>27,515</b>	<b>1,378,439</b>
Arkansas .....	75,715	10,855	7,364	93,934
Louisiana .....	249,600	.....	14,084	263,684
Oklahoma .....	305,681	1,700	30,056	337,437
Texas .....	840,060	6,595	65,073	911,728
<b>Total West South Central.....</b>	<b>1,471,056</b>	<b>19,150</b>	<b>116,577</b>	<b>1,606,783</b>
Montana .....	8,085	300,414	1,779	310,278
Idaho .....	750	203,986	770	205,506
Wyoming .....	24,709	2,982	3,116	30,807
Colorado .....	148,569	52,107	1,678	202,354
New Mexico .....	34,227	981	7,665	42,873
Arizona .....	32,727	87,450	18,145	138,322
Utah .....	41,000	100,840	3,268	145,108
Nevada .....	350	10,791	1,436	12,577
<b>Total Mountain.....</b>	<b>290,417</b>	<b>759,551</b>	<b>37,857</b>	<b>1,087,825</b>
Washington .....	178,627	585,632	999	765,258
Oregon .....	170,220	155,704	1,479	327,403
California .....	1,141,900	1,571,052	6,032	2,718,984
<b>Total Pacific.....</b>	<b>1,490,747</b>	<b>2,312,388</b>	<b>8,510</b>	<b>3,811,645</b>



TABLE XVII  
KILOWATT-HOURS GENERATED (NET), YEAR 1930

	By Fuels	By Water Power	Total
<b>Total United States</b> .....	<b>59,387,027,000</b>	<b>29,204,709,000</b>	<b>88,591,736,000</b>
Maine .....	65,124,000	633,792,000	698,916,000
New Hampshire .....	71,882,000	292,998,000	364,880,000
Vermont .....	2,294,000	469,941,000	472,235,000
Massachusetts .....	2,065,392,000	484,375,000	2,549,767,000
Rhode Island .....	544,048,000	2,571,000	546,619,000
Connecticut .....	1,008,986,000	190,348,000	1,199,334,000
<b>Total New England</b> .....	<b>3,757,726,000</b>	<b>2,074,025,000</b>	<b>5,831,751,000</b>
New York .....	6,578,071,000	4,757,555,000	11,335,626,000
New Jersey .....	2,821,739,000	1,888,000	2,823,627,000
Pennsylvania .....	7,195,368,000	648,643,000	7,844,011,000
<b>Total Middle Atlantic</b> .....	<b>16,595,178,000</b>	<b>5,408,086,000</b>	<b>22,003,264,000</b>
Ohio .....	5,773,811,000	23,876,000	5,797,687,000
Indiana .....	2,748,015,000	108,577,000	2,856,592,000
Illinois .....	6,592,406,000	228,625,000	6,821,031,000
Michigan .....	3,283,129,000	708,293,000	3,991,422,000
Wisconsin .....	1,317,384,000	838,261,000	2,155,645,000
<b>Total East No. Central</b> .....	<b>19,714,745,000</b>	<b>1,907,632,000</b>	<b>21,622,377,000</b>
Minnesota .....	597,697,000	529,509,000	1,127,206,000
Iowa .....	852,175,000	682,271,000	1,534,446,000
Missouri .....	1,215,998,000	52,798,000	1,268,796,000
North Dakota .....	124,667,000	.....	124,667,000
South Dakota .....	100,551,000	13,709,000	114,260,000
Nebraska .....	532,356,000	34,991,000	567,347,000
Kansas .....	982,532,000	19,378,000	1,001,910,000
<b>Total West No. Central</b> .....	<b>4,405,976,000</b>	<b>1,332,656,000</b>	<b>5,738,632,000</b>
Delaware .....	18,259,000	.....	18,259,000
Maryland .....	872,936,000	988,966,000	1,861,902,000
Dist. of Columbia .....	504,026,000	.....	504,026,000
Virginia .....	1,038,622,000	192,245,000	1,230,867,000
West Virginia .....	1,937,072,000	84,139,000	2,021,211,000
North & South Carolina.....	578,976,000	1,682,892,000	2,261,868,000
Georgia .....	76,492,000	940,737,000	1,017,229,000
Florida .....	626,068,000	51,617,000	677,685,000
<b>Total South Atlantic</b> .....	<b>5,652,451,000</b>	<b>3,940,596,000</b>	<b>9,593,047,000</b>
Kentucky .....	486,629,000	201,368,000	687,997,000
Tennessee .....	299,052,000	537,467,000	836,519,000
Alabama .....	16,456,000	1,742,875,000	1,759,331,000
Mississippi .....	61,874,000	.....	61,874,000
<b>Total East So. Central</b> .....	<b>864,011,000</b>	<b>2,481,710,000</b>	<b>3,345,721,000</b>
Arkansas .....	68,404,000	39,767,000	108,171,000
Louisiana .....	1,065,713,000	.....	1,065,713,000
Oklahoma .....	954,948,000	3,146,000	958,094,000
Texas .....	2,892,095,000	23,001,000	2,915,096,000
<b>Total West So. Central</b> .....	<b>4,981,160,000</b>	<b>65,914,000</b>	<b>5,047,074,000</b>
Montana .....	21,513,000	1,298,287,000	1,319,800,000
Idaho .....	399,000	800,138,000	800,537,000
Wyoming .....	52,423,000	3,721,000	56,144,000
Colorado .....	294,389,000	231,256,000	525,645,000
New Mexico .....	74,150,000	1,721,000	75,871,000
Arizona .....	138,295,000	243,126,000	381,421,000
Utah .....	49,519,000	243,031,000	292,550,000
Nevada .....	2,284,000	40,611,000	42,895,000
<b>Total Mountain</b> .....	<b>632,972,000</b>	<b>2,861,891,000</b>	<b>3,494,863,000</b>
Washington .....	239,266,000	2,288,609,000	2,527,875,000
Oregon .....	429,538,000	771,008,000	1,200,546,000
California .....	2,114,004,000	6,072,582,000	8,186,586,000
<b>Total Pacific</b> .....	<b>2,782,808,000</b>	<b>9,132,199,000</b>	<b>11,915,007,000</b>

TABLE XVIII  
NUMBER OF CUSTOMERS  
(As of December 31, 1930)

	Domestic Service	Commercial Service Small Lt. & Pr.	Large Lt. & Pr.	All Others	Total
<b>Total United States.....</b>	<b>20,331,551</b>	<b>3,628,653</b>	<b>542,434</b>	<b>53,094</b>	<b>24,555,732</b>
Maine .....	152,946	40,124	5,170	1,296	199,536
New Hampshire .....	104,272	14,182	2,842	635	121,931
Vermont .....	62,855	14,353	2,419	304	79,931
Massachusetts .....	1,035,762	170,171	14,790	512	1,221,235
Rhode Island .....	162,441	23,182	3,354	116	189,093
Connecticut .....	340,322	77,210	5,507	182	423,221
<i>Total New England....</i>	<i>1,858,598</i>	<i>339,222</i>	<i>34,082</i>	<i>3,045</i>	<i>2,234,947</i>
New York .....	3,099,932	523,497	20,125	4,486	3,648,040
New Jersey .....	950,150	159,162	41,641	1,254	1,152,207
Pennsylvania .....	1,766,061	286,771	36,574	5,436	2,094,842
<i>Total Middle Atlantic..</i>	<i>5,816,143</i>	<i>969,430</i>	<i>98,340</i>	<i>11,176</i>	<i>6,895,089</i>
Ohio .....	1,319,348	188,246	18,956	3,908	1,530,458
Indiana .....	590,867	91,683	7,390	1,716	691,656
Illinois .....	1,589,547	264,706	13,869	4,973	1,873,095
Michigan .....	937,036	158,344	3,075	856	1,099,311
Wisconsin .....	534,201	89,079	13,088	973	637,341
<i>Total East No. Central.</i>	<i>4,970,999</i>	<i>792,058</i>	<i>56,378</i>	<i>12,426</i>	<i>5,831,861</i>
Minnesota .....	400,275	63,284	16,429	984	480,972
Iowa .....	382,186	77,660	7,887	1,085	468,818
Missouri .....	558,556	93,917	11,663	3,571	667,707
North Dakota .....	51,220	13,469	2,019	386	67,094
South Dakota .....	67,586	17,048	2,752	417	87,803
Nebraska .....	208,292	36,115	2,754	617	247,778
Kansas .....	290,611	58,441	6,030	928	356,010
<i>Total West No. Central.</i>	<i>1,958,726</i>	<i>359,934</i>	<i>49,534</i>	<i>7,988</i>	<i>2,376,182</i>
Delaware .....	35,662	8,156	470	90	44,378
Maryland and D. C. ....	380,687	65,138	1,771	210	447,806
Virginia .....	222,329	36,562	3,990	670	263,551
West Virginia .....	151,187	45,897	2,606	772	200,462
North Carolina .....	200,149	46,660	3,746	780	251,335
South Carolina .....	100,097	22,562	1,197	376	124,232
Georgia .....	197,917	43,710	677	548	242,852
Florida .....	204,849	33,627	4,087	1,764	244,327
<i>Total South Atlantic...</i>	<i>1,492,877</i>	<i>302,312</i>	<i>18,544</i>	<i>5,210</i>	<i>1,818,943</i>
Kentucky .....	234,702	51,766	4,783	884	292,135
Tennessee .....	202,758	44,833	5,453	460	253,504
Alabama .....	155,526	36,310	1,083	524	193,443
Mississippi .....	84,155	20,768	1,041	853	106,817
<i>Total East So. Central.</i>	<i>677,141</i>	<i>153,677</i>	<i>12,360</i>	<i>2,721</i>	<i>845,899</i>
Arkansas .....	95,737	30,859	4,880	936	132,412
Louisiana .....	156,574	29,267	6,628	709	193,178
Oklahoma .....	227,660	53,315	19,613	1,407	301,995
Texas .....	559,007	121,020	19,809	2,636	702,472
<i>Total West So. Central.</i>	<i>1,038,978</i>	<i>234,461</i>	<i>50,930</i>	<i>5,688</i>	<i>1,330,057</i>
Montana .....	66,844	15,137	2,974	165	85,120
Idaho .....	52,853	14,307	15,738	118	83,016
Wyoming .....	30,067	4,827	1,309	38	36,241
Colorado .....	164,834	31,116	15,014	169	211,133
New Mexico .....	27,055	4,995	1,703	28	33,781
Arizona .....	56,347	10,344	6,195	152	73,038
Utah .....	85,672	13,172	12,861	165	111,870
Nevada .....	14,356	2,507	2,406	28	19,297
<i>Total Mountain.....</i>	<i>498,028</i>	<i>96,405</i>	<i>54,200</i>	<i>863</i>	<i>649,496</i>
Washington .....	343,326	60,311	50,198	308	454,143
Oregon .....	187,564	36,852	17,096	283	241,795
California .....	1,489,171	283,991	96,772	3,386	1,873,320
<i>Total Pacific.....</i>	<i>2,020,061</i>	<i>381,154</i>	<i>164,066</i>	<i>3,977</i>	<i>2,569,258</i>



TABLE XIX  
NUMBER OF HOMES RECEIVING ELECTRIC SERVICE\*  
YEARS 1925-1930

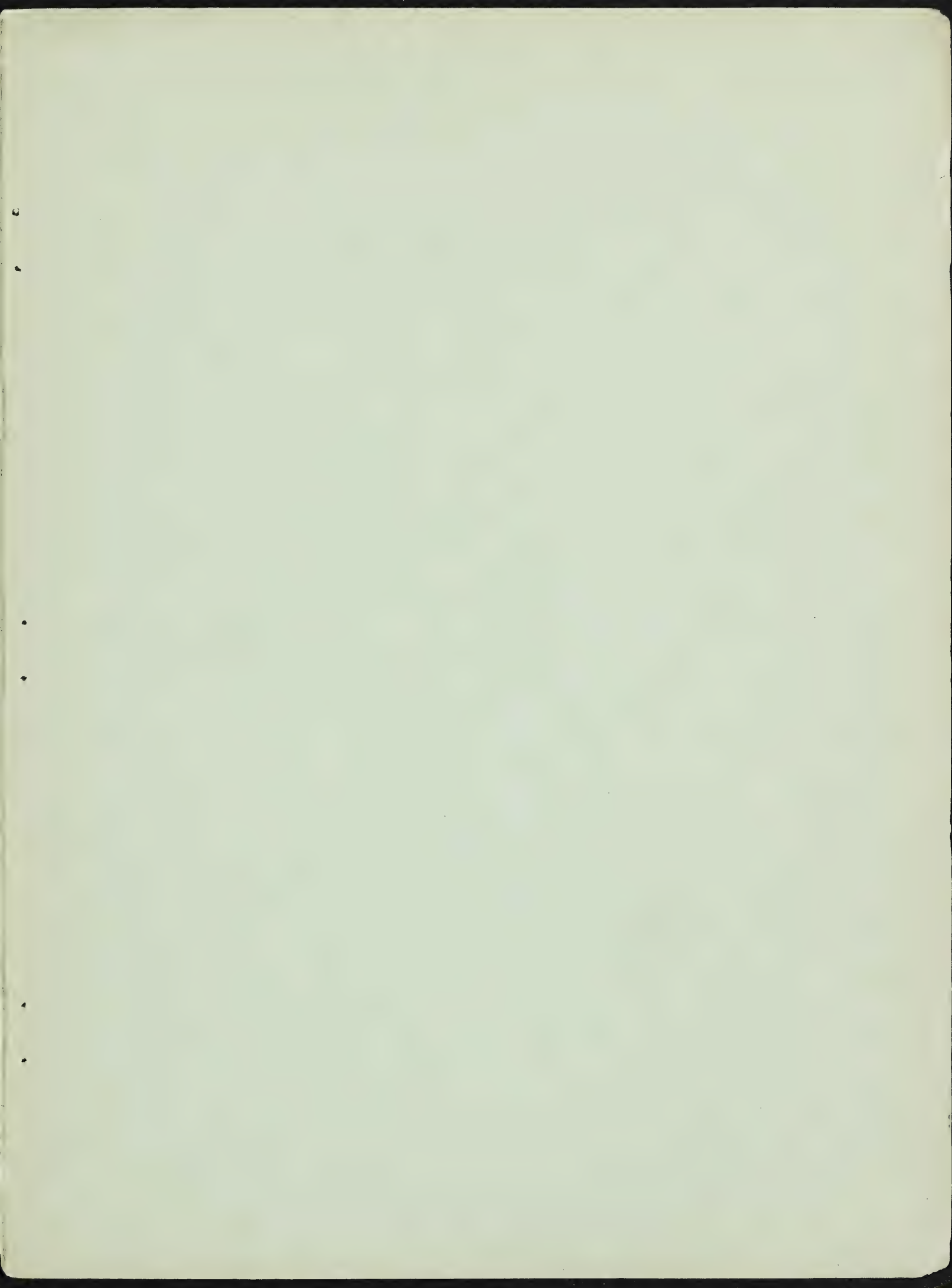
	Number of Homes Receiving Electric Service on					
	Dec. 31st 1930	Dec. 31st 1929	Dec. 31st 1928	Dec. 31st 1927	Dec. 31st 1926	Dec. 31st 1925
<b>Total United States</b> .....	<b>20,453,263</b>	<b>20,073,509</b>	<b>19,177,734</b>	<b>18,021,989</b>	<b>16,761,638</b>	<b>15,323,991</b>
Maine .....	152,946	146,775	147,706	140,944	131,725	126,565
New Hampshire .....	104,272	100,986	98,629	91,489	83,349	76,929
Vermont .....	62,855	60,752	59,352	58,720	57,130	56,130
Massachusetts .....	1,035,762	1,007,384	959,384	906,384	845,784	778,930
Rhode Island .....	162,441	159,372	153,646	141,230	131,790	120,300
Connecticut .....	340,322	334,581	323,660	309,905	292,155	272,555
<b>Total New England</b> .....	<b>1,858,598</b>	<b>1,809,850</b>	<b>1,742,377</b>	<b>1,648,672</b>	<b>1,541,933</b>	<b>1,431,409</b>
New York .....	3,099,932	3,043,398	2,914,708	2,690,708	2,437,981	2,143,681
New Jersey .....	950,150	923,794	863,560	798,060	727,238	640,399
Pennsylvania .....	1,766,061	1,710,288	1,649,132	1,549,958	1,427,958	1,317,958
<b>Total Middle Atlantic</b> .....	<b>5,816,143</b>	<b>5,677,480</b>	<b>5,427,400</b>	<b>5,038,726</b>	<b>4,593,177</b>	<b>4,102,038</b>
Ohio .....	1,319,348	1,318,520	1,243,497	1,173,997	1,100,743	1,018,500
Indiana .....	590,867	585,696	564,583	547,583	523,970	497,820
Illinois .....	1,589,547	1,589,429	1,530,185	1,478,897	1,403,110	1,302,110
Michigan .....	937,036	943,465	895,835	831,651	778,251	727,051
Wisconsin .....	534,201	523,100	496,478	464,854	438,269	402,857
<b>Total East No. Central</b> .....	<b>4,970,999</b>	<b>4,960,210</b>	<b>4,730,578</b>	<b>4,496,982</b>	<b>4,244,343</b>	<b>3,948,338</b>
Minnesota .....	400,275	393,887	390,037	379,607	361,173	343,523
Iowa .....	382,186	374,659	365,611	354,986	341,746	324,806
Missouri .....	558,556	555,107	504,061	517,441	494,801	466,993
North Dakota .....	51,220	50,567	48,872	45,907	42,527	36,177
South Dakota .....	67,586	64,753	64,086	61,424	57,483	53,523
Nebraska .....	208,292	202,027	192,404	185,781	175,392	169,312
Kansas .....	290,611	280,563	265,492	254,817	241,573	228,193
<b>Total West No. Central</b> .....	<b>1,958,726</b>	<b>1,921,563</b>	<b>1,866,563</b>	<b>1,799,963</b>	<b>1,714,695</b>	<b>1,622,527</b>
Delaware .....	35,662	34,864	32,074	29,000	26,580	23,576
Maryland & D. C. ....	380,687	376,548	347,105	320,000	290,480	252,412
Virginia .....	222,329	208,648	194,057	182,687	169,344	154,344
West Virginia .....	151,187	145,893	134,127	118,801	95,401	75,401
North Carolina .....	200,149	196,549	187,676	174,976	164,316	157,075
South Carolina .....	100,097	95,801	92,411	78,588	67,988	61,838
Georgia .....	197,917	193,803	183,595	156,195	137,575	122,090
Florida .....	204,849	213,897	214,549	217,949	219,219	164,660
<b>Total South Atlantic</b> .....	<b>1,492,877</b>	<b>1,466,003</b>	<b>1,385,594</b>	<b>1,278,196</b>	<b>1,170,903</b>	<b>1,011,396</b>
Kentucky .....	234,702	229,253	216,005	202,445	183,245	156,245
Tennessee .....	202,758	198,691	187,166	177,166	165,544	149,984
Alabama .....	155,526	151,677	145,341	132,816	120,394	103,874
Mississippi .....	84,155	79,994	72,627	60,227	53,092	49,880
<b>Total East So. Central</b> .....	<b>677,141</b>	<b>659,615</b>	<b>621,139</b>	<b>572,654</b>	<b>522,275</b>	<b>459,983</b>
Arkansas .....	100,191	97,719	91,359	84,539	78,239	72,719
Louisiana .....	159,428	152,479	142,484	136,524	131,524	113,223
Oklahoma .....	231,852	229,262	211,520	187,720	165,990	151,990
Texas .....	567,624	557,365	528,805	484,180	435,580	395,580
<b>Total West So. Central</b> .....	<b>1,059,095</b>	<b>1,036,825</b>	<b>974,168</b>	<b>892,963</b>	<b>811,333</b>	<b>733,512</b>
Montana .....	68,902	66,002	63,948	60,871	55,380	54,052
Idaho .....	66,015	65,817	62,551	61,594	60,654	58,654
Wyoming .....	30,623	29,502	27,358	26,053	24,617	22,686
Colorado .....	173,253	171,423	166,461	160,054	156,324	143,918
New Mexico .....	28,182	27,276	25,152	22,478	20,434	19,169
Arizona .....	61,147	59,494	50,567	44,985	38,693	35,352
Utah .....	97,852	106,026	103,554	101,000	98,353	94,633
Nevada .....	15,970	14,360	13,753	13,081	12,489	11,889
<b>Total Mountain</b> .....	<b>541,944</b>	<b>539,900</b>	<b>513,344</b>	<b>490,116</b>	<b>466,944</b>	<b>440,353</b>
Washington .....	384,949	373,760	355,183	332,562	307,340	279,840
Oregon .....	203,590	197,290	188,375	174,642	165,482	151,382
California .....	1,489,171	1,431,013	1,373,013	1,296,513	1,223,213	1,143,213
<b>Total Pacific</b> .....	<b>2,077,740</b>	<b>2,002,063</b>	<b>1,916,571</b>	<b>1,803,717</b>	<b>1,696,035</b>	<b>1,574,435</b>

\*The number of homes receiving electric service is a total of the customers served on the domestic and farm service rate schedules except in California, where a large amount of irrigation pumping is involved.

TABLE XX  
ESTIMATED NUMBER OF FARMS SERVED

	Number of Farms Served			Farms Added	% Electrified	
	on Dec. 31, 1930	on Dec. 31, 1929	on Dec. 31, 1928	During 1930	% Increase	on Dec. 31, 1930
<b>Total United States.....</b>	<b>644,421</b>	<b>556,871</b>	<b>460,969</b>	<b>87,555</b>	<b>+ 15.7</b>	<b>10.2</b>
Maine .....	16,100	14,750	11,878	1,350	+ 9.2	40.9
New Hampshire .....	6,945	6,273	3,503	672	+ 10.7	46.7
Vermont .....	3,233	2,810	2,414	423	+ 15.1	12.9
Massachusetts .....	12,916	12,353	11,097	563	+ 4.6	50.5
Rhode Island .....	855	839	755	16	+ 1.9	25.4
Connecticut .....	4,664	4,464	4,141	200	+ 4.5	26.7
<i>Total New England...</i>	<i>44,713</i>	<i>41,489</i>	<i>33,788</i>	<i>3,224</i>	<i>+ 7.8</i>	<i>35.6</i>
New York .....	57,030	53,060	47,800	3,970	+ 7.5	35.7
New Jersey .....	9,807	9,526	8,944	281	+ 2.9	39.9
Pennsylvania .....	40,902	33,335	27,105	7,567	+ 22.7	23.7
<i>Total Middle Atlantic..</i>	<i>107,739</i>	<i>95,921</i>	<i>83,849</i>	<i>11,818</i>	<i>+ 12.3</i>	<i>30.2</i>
Ohio .....	45,767	38,045	30,575	7,722	+ 20.3	20.8
Indiana .....	20,523	17,983	15,163	2,540	+ 14.1	11.3
Illinois .....	20,956	16,854	13,494	4,102	+ 24.3	9.8
Michigan .....	27,533	22,293	18,200	5,240	+ 23.5	16.2
Wisconsin .....	36,181	30,177	22,700	6,004	+ 19.9	19.9
<i>Total East North Central</i>	<i>150,960</i>	<i>125,352</i>	<i>100,132</i>	<i>25,608</i>	<i>+ 20.4</i>	<i>15.6</i>
Minnesota .....	12,772	11,252	10,500	1,520	+ 13.5	6.9
Iowa .....	21,947	17,947	13,817	4,000	+ 22.3	10.1
Missouri .....	11,147	9,129	7,007	2,018	+ 22.1	4.4
North Dakota .....	560	518	506	42	+ 8.1	0.7
South Dakota .....	1,682	1,484	1,242	198	+ 13.3	2.0
Nebraska .....	7,867	6,537	4,047	1,330	+ 20.3	6.1
Kansas .....	8,672	7,552	5,331	1,120	+ 14.8	5.2
<i>Total West North Central</i>	<i>64,647</i>	<i>54,419</i>	<i>42,450</i>	<i>10,228</i>	<i>+ 18.8</i>	<i>5.8</i>
Delaware .....	1,056	922	700	134	+ 14.5	10.8
Maryland & D. of C. ....	10,660	9,635	8,217	1,025	+ 10.6	24.6
Virginia .....	12,642	10,236	7,680	2,406	+ 23.5	7.4
West Virginia .....	6,355	5,845	4,525	510	+ 8.7	7.7
North Carolina .....	6,823	5,940	5,250	883	+ 14.9	2.4
South Carolina .....	1,969	1,723	1,178	246	+ 2.7	1.2
Georgia .....	5,344	4,129	3,941	1,215	+ 29.4	2.1
Florida .....	3,647	3,386	2,781	261	+ 7.7	6.1
<i>Total South Atlantic..</i>	<i>48,496</i>	<i>41,816</i>	<i>34,272</i>	<i>6,480</i>	<i>+ 14.3</i>	<i>4.6</i>
Kentucky .....	8,915	7,225	5,700	1,690	+ 23.4	3.6
Tennessee .....	3,230	1,578	1,218	1,652	+ 104.7	1.3
Alabama .....	11,289	8,062	6,632	3,227	+ 40.0	4.4
Mississippi .....	3,470	1,964	1,356	1,506	+ 76.7	1.1
<i>Total East South Central</i>	<i>26,904</i>	<i>18,829</i>	<i>14,906</i>	<i>8,075</i>	<i>+ 42.9</i>	<i>2.5</i>
Arkansas .....	2,454	1,609	1,217	845	+ 52.5	1.0
Louisiana .....	2,854	2,440	1,904	414	+ 17.0	1.8
Oklahoma .....	4,192	3,303	2,668	889	+ 26.9	2.1
Texas .....	8,617	7,021	5,785	1,596	+ 22.7	1.7
<i>Total West South Central</i>	<i>18,117</i>	<i>14,373</i>	<i>11,574</i>	<i>3,744</i>	<i>+ 26.0</i>	<i>1.7</i>
Montana .....	2,058	1,844	890	214	+ 11.6	4.3
Idaho .....	13,162	11,754	9,157	1,408	+ 12.0	31.6
Wyoming .....	556	532	388	24	+ 4.5	3.5
Colorado .....	8,419	8,079	6,670	340	+ 4.2	13.9
New Mexico .....	1,127	1,079	923	48	+ 4.4	3.6
Arizona .....	4,800	3,989	2,065	811	+ 20.3	36.2
Utah .....	12,180	11,730	10,114	450	+ 3.8	45.0
Nevada .....	1,614	1,360	1,200	254	+ 18.7	47.0
<i>Total Mountain .....</i>	<i>43,916</i>	<i>40,367</i>	<i>31,407</i>	<i>3,549</i>	<i>+ 8.8</i>	<i>18.2</i>
Washington .....	41,653	37,813	34,443	3,840	+ 10.2	58.4
Oregon .....	16,026	13,802	11,428	2,224	+ 16.1	29.0
California .....	81,250	72,690	62,720	8,560	+ 11.8	59.5
<i>Total Pacific .....</i>	<i>138,929</i>	<i>124,305</i>	<i>108,591</i>	<i>14,624</i>	<i>+ 11.8</i>	<i>52.8</i>





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**NATIONAL ELECTRIC LIGHT ASSOCIATION**  
*420 Lexington Avenue, New York City*

# FOREWORD

THE statistics herein contained embrace the operations of enterprises devoted exclusively to the generation and distribution of electricity, and operations of electric departments of enterprises which maintain electric light and power systems jointly with other public utility services.

Reports from which the data are determined are received by the National Electric Light Association from some 400 companies and municipal electric plants, whose operations represent approximately 92 per cent of the entire

industry. With information from the annual reports of other enterprises filed with the various public service commissions, the data were prorated and augmented to cover 100 per cent of the electric light and power business.

Figures of sales and revenues reported herein show slight divergence from preliminary data reported early in 1932. This is occasioned largely by the fact that this year a number of companies have made a further revision of customer classifications.

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# THE ELECTRIC LIGHT AND POWER INDUSTRY FOR THE YEAR 1931

## Outstanding Factors of the Year 1931

**T**HE electric light and power industry of the United States, in common with other business activities, was again affected by economic conditions during 1931 with the result that the interruption of growth, which the industry experienced in 1930, was continued.

Total electricity sold to all classes of ultimate customers (as shown in Table I) aggregated 71,901,882,000 kwhr in 1931, a decline of 4.0 per cent compared with sales in 1930, and of 4.5 per cent compared with sales in 1929 when the industry recorded the maximum sales volume in history.

Total operating revenues from all classes of ultimate customers aggregated \$1,975,944,500 in 1931, a decline of  $\frac{3}{4}$  of 1 per cent compared with revenues in 1930.

The residential class of customers was the only large class which showed an increase in its use of electricity during 1931, and the average unit revenue received by electric light and

power companies from these customers was lower than in 1930. These domestic customers used 6.5 per cent more electricity but paid only 2.1 per cent more in 1931 than in 1930.

Commercial, both wholesale and retail, and other classes of business customers used less electricity in 1931 than in 1930, but there was an increase in the average unit revenue from these sales.

Thus, due to domestic customers who bought more electricity and the higher unit cost to other customers who bought less electricity, the total operating revenues of electric light and power companies as a whole declined at a lesser rate than the decline in total sales of electricity.

Because of the large decline in manufacturing and other industrial activities the demand for electricity for such purposes was curtailed, the sales to this class of customer showing a decrease of 7.6 per cent from the sales of the previous year. The shrinkage of electric railway traffic reflected

a decrease of 8.9 per cent in electric energy for such operations, whereas, due to new electrifications of steam railroads, an increase of 5.9 per cent occurred in these sales.

## The Industry's Growth since 1902

The first census of the electric light and power industry was taken in 1902. The development of the industry since that time is set forth in Table II—which also gives data of intervening census reports of 1912, 1922 and 1927. In the 29 years, 1902 to 1931, the population of the United States increased 63 per cent. In the same period the principal factors of operations of the electric industry have increased many-fold, as follows:

### Growth from 1902 to 1931

	Multiplied (Times)
Number of customers.....	42
Capacity of plants.....	27
Value of plant and equipment.....	26
Electricity generated.....	34
Gross operating revenues.....	25
Taxes paid.....	79

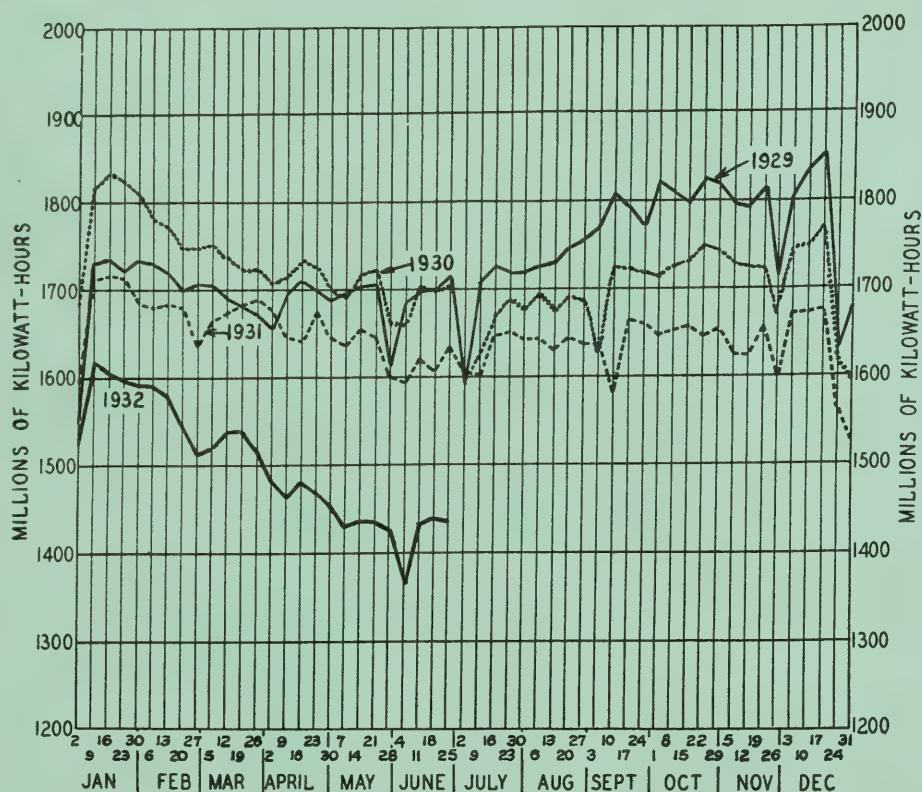


Chart 1. Weekly Electric Power Output.

## Generation of Electricity and Present Output Trend

The generation of electricity in 1931 was 85,575,307,000 kwhr, which was 3,016,429,000 kwhr, or 3.4 per cent, less than that of 1930. Importations of electricity from Canada, which normally constitute only about 1 per cent of the aggregate output of this country, decreased from 1,084,432,000 to 794,199,000 kwhr, a 27 per cent decline. Due in part to the continuance into the early part of 1931 of the drought of the year before and in part to lessened industrial requirements for electric power, the generation by hydro-electric plants was 6 per cent below the figure of 1930 and 11 per cent below the high record established in 1928. The generation by fuel burning plants declined 2.3 per cent, with an accompanying improvement in the over-all average efficiency of steam power production of somewhat more than 4 per cent.

During the first 6 months of 1932 the figures reported for weekly output of the industry, as indicated by Chart

TABLE I  
PRODUCTION AND SALES OF ELECTRICITY IN RECENT YEARS

	1931	1930	1929	1928	1927	1926
<b>KILOWATTHOURS GENERATED</b>						
By fuel.....	58,037,649,000	59,387,027,000	59,128,131,000	49,446,510,000	46,862,526,000	44,145,965,000
By water power.....	27,537,658,000	29,204,709,000	30,956,297,000	31,006,988,000	26,381,919,000	23,843,817,000
Total kilowatthours generated.....	85,575,307,000	88,591,736,000	90,084,428,000	80,453,498,000	73,244,445,000	67,989,782,000
<b>ADDITIONS TO SUPPLY</b>						
Energy purchased from other sources.....	2,031,003,000	2,280,707,000	1,711,037,000	1,790,172,000	1,958,840,000	1,671,740,000
Energy imported from adjacent states.....	12,488,401,000	11,901,681,000	11,134,284,000	9,314,288,000	7,247,929,000	6,739,759,000
Energy imported over International Boundaries.....	794,199,000	1,084,432,000	961,702,000	1,155,551,000	1,165,899,000	814,633,000
<b>DEDUCTIONS FROM SUPPLY</b>						
Energy exported to adjacent state.....	12,488,401,000	11,901,681,000	11,134,284,000	9,314,288,000	7,247,929,000	6,739,759,000
Energy used in Electric Railway Departments.....	970,286,000	1,183,714,000	1,278,832,000	1,329,527,000	1,347,990,000	1,599,330,000
Energy used in Electric and other Departments.....	1,366,254,000	1,306,062,000	1,201,182,000	1,234,861,000	1,110,680,000	1,023,250,000
Total energy for distribution.....	86,063,969,000	89,467,099,000	90,277,153,000	80,829,833,000	73,910,514,000	67,923,575,000
Energy lost in transmission, distribution, etc.....	14,162,087,000	14,561,007,000	14,982,686,000	13,841,883,000	12,659,395,000	11,834,505,000
Kilowatthours sold to ultimate consumers.....	71,901,882,000	74,906,092,000	75,294,467,000	66,987,950,000	61,251,119,000	56,089,370,000
<b>NUMBER OF CUSTOMERS (AVERAGE FOR YEAR)</b>						
Domestic (including non-irrigated farms).....	20,084,582*	20,149,352	19,528,518	18,520,408	17,328,777	15,991,612
Commercial—Small light and power (retail).....	3,717,054	3,613,384	3,565,302	3,445,316	3,256,335	3,040,959
Commercial—Large light and power (wholesale).....	551,497	541,051	519,312	473,967	425,211	382,688
Municipal street lighting.....	34,302	28,670	22,660	22,387	22,139	21,847
Street and interurban railways.....	635	728	815	817	819	819
Electrified steam railroads.....	30	24	20	20	19	19
Municipal and miscellaneous.....	24,324	18,248	13,591	6,817	7,534	10,040
Total number of ultimate consumers.....	24,412,424	24,351,457	23,650,218	22,469,732	21,040,834	19,447,984
<b>KILOWATTHOURS SOLD TO ULTIMATE CONSUMERS</b>						
Domestic service (including non-irrigated farms).....	11,737,924,000	11,018,072,000	9,772,788,000	8,618,884,000	7,675,970,000	6,827,305,000
Commercial—Small light and power (retail).....	13,543,906,000	13,943,975,000	13,106,242,000	11,692,092,000	10,766,337,000	9,484,730,000
Commercial—Large light and power (wholesale).....	38,450,669,000	41,620,952,000	44,325,812,000	38,903,349,000	35,262,716,000	32,614,646,000
Municipal street lighting.....	2,330,228,000	2,226,545,000	2,037,809,000	1,911,379,000	1,741,436,000	1,589,135,000
Street and interurban railways.....	4,549,017,000	4,996,885,000	5,049,450,000	4,990,918,000	5,039,269,000	4,951,032,000
Electrified steam railroads.....	625,943,000	591,322,000	590,351,000	559,829,000	503,642,000	426,131,000
Municipal and miscellaneous.....	664,195,000	508,341,000	412,015,000	311,499,000	261,749,000	196,391,000
Total to ultimate consumers.....	71,901,882,000	74,906,092,000	75,294,467,000	66,987,950,000	61,251,119,000	56,089,370,000
<b>REVENUE FROM ULTIMATE CONSUMERS</b>						
Domestic service (including non-irrigated farms).....	\$ 678,611,300	\$ 664,441,200	\$ 618,798,800	\$ 571,619,800	\$ 523,688,800	\$ 478,181,800
Commercial—Small light and power (retail).....	564,523,800	575,598,100	555,640,400	519,957,100	482,135,900	427,407,300
Commercial—Large light and power (wholesale).....	570,127,000	590,992,100	613,171,400	549,988,900	519,074,500	488,914,800
Municipal street lighting.....	99,998,700	95,458,300	88,323,400	83,024,400	77,248,200	68,023,400
Street and interurban railways.....	41,912,300	46,067,600	46,277,400	46,488,700	47,965,000	47,617,800
Electrified steam railroads.....	6,725,200	6,015,400	5,986,300	5,559,800	5,172,000	4,372,500
Municipal and miscellaneous.....	14,746,200	12,382,400	10,322,500	7,670,400	5,747,600	5,641,400
Total from ultimate consumers.....	\$1,975,944,500	\$1,990,955,100	\$1,938,520,200	\$1,784,309,100	\$1,661,032,000	\$1,520,159,000
<b>KILOWATT GENERATING CAPACITY (AVERAGE FOR YEAR)</b>						
Steam.....	23,625,038	22,585,330	20,693,700	19,331,728	17,877,748	16,677,000
Internal combustion.....	431,961	396,141	336,014	See Steam	See Steam	See Steam
Water power.....	8,506,414	7,742,807	7,359,935	6,917,655	6,324,938	6,100,000
Total.....	32,563,413	30,724,278	28,389,649	26,249,383	24,202,686	22,777,000

\* Note: Average as adjusted for reclassification of customers which took place in 1931.



TABLE II

PRINCIPAL STATISTICS OF THE DEVELOPMENT OF THE ELECTRIC LIGHT AND POWER INDUSTRY IN THE UNITED STATES DURING THE LAST 30 YEARS

	1902 U. S. Census*	1912 U. S. Census (90% of Industry*)	1922 U. S. Census (93% of Industry*)	1927 U. S. Census (100% of Industry*)	1931 N. E. L. A. (100% of Industry)
Value of plant and equipment**.....	\$504,740,000	\$2,175,678,000	\$4,465,016,000	\$9,382,000,000†	\$13,000,000,000
Gross operating revenues.....	\$ 84,187,000	\$ 281,998,000	\$1,028,779,000	\$1,824,457,000	\$ 2,140,000,000
Taxes.....	\$ 2,665,005	\$ 13,147,000	\$ 73,773,000	\$ 150,825,000	\$ 210,000,000
Prime movers:** steam (hp).....	1,394,395	4,949,778	14,171,222	25,317,577	32,000,000
internal combustion (hp).....	12,181	111,035	302,995	548,288	660,000
water power (hp).....	438,472	2,469,231	5,822,018	9,844,263	12,700,000
Prime movers:** total (hp).....	1,845,048	7,530,044	20,296,235	35,710,128	45,360,000
Generating capacity** (kilowatts).....	1,212,200	5,165,400	14,313,000	25,811,305	33,076,900
Kilowatthours generated by fuels.....				45,968,240,000	58,037,649,000
Kilowatthours generated by water power.....				28,718,138,000	27,537,658,000
Total kilowatthours generated.....	2,507,051,000	11,569,110,000	40,291,536,000	74,686,378,000	85,575,307,000
Number of customers:**					
Farm.....		3,100,918 }	10,211,232 }	393,221†	698,786
Domestic.....	(Separation }	605,600 }	2,030,324 }	17,696,063†	19,658,018
Commercial (small).....	not }			3,356,140†	3,724,013
Commercial (large).....	available) }	131,000 }	468,312 }	312,627†	348,260
Others.....				28,161†	60,693
Total.....	583,000	3,837,518	12,709,868	21,786,212†	24,489,770
Population of the United States**.....	76,500,000	96,300,000	110,000,000	119,100,000	124,511,250
Population living in electric lighted homes**.....		14,000,000	44,000,000	75,000,000	84,000,000

\* In past reports to the U. S. Bureau of the Census composite companies operating both power and traction systems in many cases did not separate their light and power business from their traction business and a certain percentage of the former was therefore included in the Electric Railway Census. For that reason, in comparing these data with census reports, the percentages shown are necessary to place them on the same basis. † N. E. L. A. figures.

\*\* As of December 31st of each year. Note: 1931 financial figures are preliminary and subject to minor revisions.

1, have shown a further decline below that of 1931 and this output is now running approximately 12 per cent less than for the same period 1931, but with indications that the accentuated decline for the first quarter of 1931 has practically stopped.

### Sales and Revenues in 1931

An increase took place in the total sales to the domestic customers, although at a lessened rate of increase as compared with previous years. This is believed to be due to widespread unemployment with the at-

tendant economy in use and doubling up of families, but which factors were offset to some extent by the increased use of electric appliances by other customers. Sales to domestic customers totaled 11,737,924,000 kwhr, the record figure for this class, and an increase of 6.5 per cent over 1930. Revenues from domestic customers amounted to \$678,611,300, or only 2.1 per cent more than in 1930.

The use of electricity by the commercial retail light and power customers showed only a minor decrease, total sales being 13,543,906,000 kwhr, or 2.9 per cent less than in 1930.

Revenues amounted to \$564,523,800 in 1931, a decrease of 1.9 per cent below 1930.

Sales to commercial wholesale power and light customers dropped 7.6 per cent during the year, to a total of 38,450,669,000 kwhr. Revenues from such customers amounted to \$570,127,000, or a decrease of 3.5 per cent under revenues of 1930.

Sales to street and interurban railways showed a decline, but slight increases in sales for municipal street lighting, to electrified steam railroads and for miscellaneous purposes practically offset such losses.

TABLE III  
THE AVERAGE ELECTRIC CONSUMER

Class of Service	Average Number of Consumers	In 1931			Average Number of Consumers	In 1930		
		Average Sales, Kwhr	Average Revenue per Consumer	Average Revenue per Kwhr		Average Sales, Kwhr	Average Revenue per Consumer	Average Revenue per Kwhr
Domestic (all uses).....	20,085,000	584	\$33.78	5.78c	20,150,000	548	\$ 33	6.03c
Commercial:								
Small light and power (retail).....	3,717,000	3,640	152	4.17	3,615,000	3,860	160	4.13
Large light and power (wholesale).....	551,000	69,700	1,034	1.48	541,000	77,000	1,092	1.42
Total commercial.....	4,268,000	12,180	\$266	2.18c	4,156,000	13,375	\$281	2.10c
Railways.....	665	.....	.....	0.94	750	.....	.....	0.93
Municipal and miscellaneous (a).....	58,600	.....	.....	3.81	46,900	.....	.....	3.94
All ultimate consumers.....	24,412,000	2,945	\$81	2.75c	24,350,000	3,080	\$ 82	2.66c

(a) Including street lighting.

## The Trend of Costs to the Average Consumer

The average receipts per unit of sales to the domestic class of customers showed a continuation of the decreasing trend of previous years. The average revenue per kwhr sold to this class declined from 6.03c in 1930 to 5.78c in 1931, or by 4.3 per cent.

Slight increases in average receipts per unit of sales resulted in the commercial retail and wholesale classes, owing to lessened consumption of energy and to the comparative constancy of the demand factor in the rate schedules of these classes; the customer's decrease in kwhr usually affecting only the lowest priced blocks of the schedule. The average revenue received per kwhr sold to the wholesale power and light customers registered an increase from 1.420c in 1930 to 1.483c in 1931, or 4.4 per cent.

### Domestic Service

Domestic use of electricity during 1931 showed few indications of being affected by the depression and, as a general average, the relatively small economies accomplished by the turning off of lights and by the frugal use of appliances have been greatly overbalanced by the gains in the number of electric ranges, refrigerators and water heaters in use.

The annual increase in the number of domestic consumers, which for many years has been a conspicuous factor in the growth of domestic service, tapered off in 1931 with the practical cessation of residential building and the beginning of the "doubling up" of families. At the same time, however, the increase in the use *per customer* continued, bringing the average for the year to 584, as compared

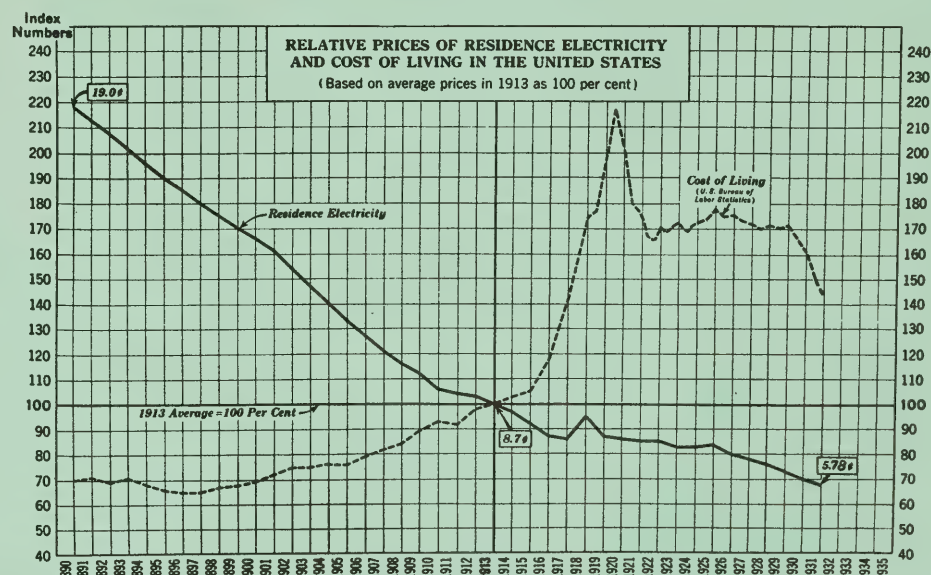


Chart 2

with 548 for 1930—an increase of 36 kwhr per consumer. Coincidentally with this increase in use, the average unit price has declined further and at the end of the year stood at 5.78c per kwhr, as compared with 6.03c at the close of 1930. The average domestic consumer thus increased his use of electricity by 6.6 per cent, while his average rate decreased by 4.3 per cent. As the result of these offsetting factors, his annual bill increased by only 78c during the year, although he used 36 kwhr more of energy.

During the past 10 years, the average domestic consumer has increased

his use of electricity by 68 per cent while his annual bill has increased only 32 per cent. Between December, 1921, and December, 1931, the cost of living decreased by only 16 per cent, while the average cost of residence electricity decreased by 22 per cent. Compared with pre-war figures, domestic electricity now stands at 33 per cent below the 1913 averages, while the cost of living index of the U. S. Bureau of Labor Statistics at the end of 1931 was still 46 per cent above them.

If the average cost of domestic electric service had followed the cost of living curve, instead of its own divergent trend, the householders of the country would have paid last year about 12½c per kwhr for their service, or more than twice the actual 1931 figure. At that rate, the total bill for residence electricity during 1931 would have been, in round numbers, \$1,500,000,000—instead of \$678,611,000 actually paid.

Table IV shows the significant figures for domestic electric service during recent years and the two charts give general trends since pre-war days.

TABLE IV  
DOMESTIC ELECTRIC SERVICE

Year	Average Use Kwhr	Average Price Paid per Kwhr	Average Annual Bill
1913	264	8.7c	\$22.97
1922	359	7.4	26.50
1926	427	7.0	29.89
1927	443	6.8	30.29
1928	463	6.6	30.76
1929	500	6.3	31.65
1930	548	6.03	33.00
1931	584	5.78	33.78

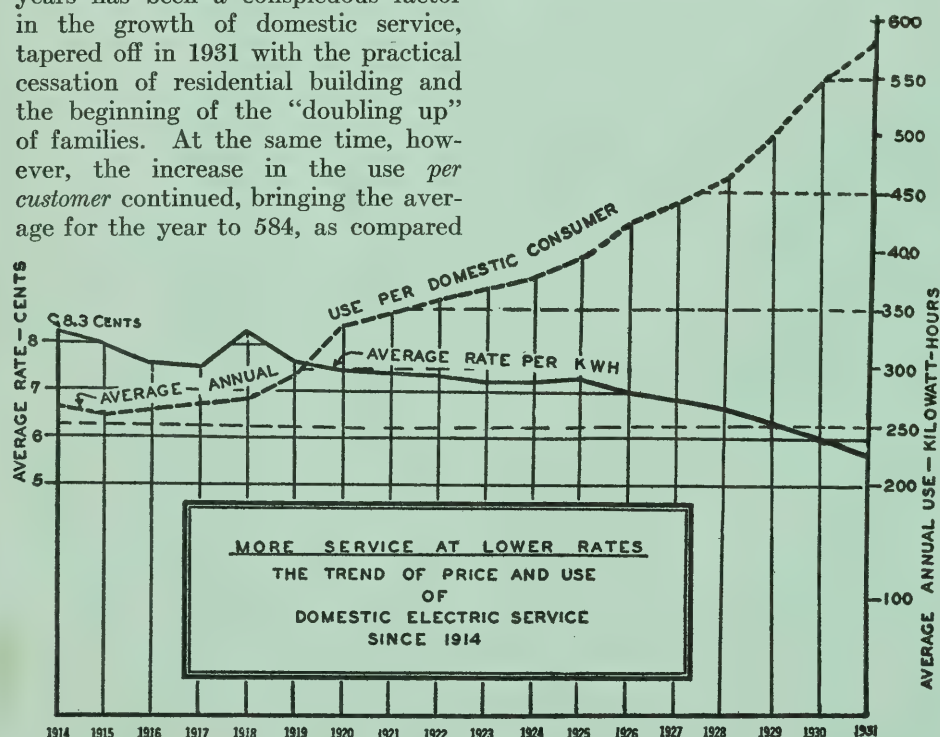


Chart 3



## Farm Service

In spite of the depression, rural electrification showed a gain of nearly 8 per cent in 1931. During the year, 48,867 additional farms were added to the number already using electric service from public utility lines, bringing the total number served to practically 700,000, or 11 per cent of all farms.

A previous survey by the Association's Rural Electric Service Committee showed that at the end of 1923 there were 177,500 farms obtaining service. During the 8 years since that time the number of electrified farms has increased 3 times and Table VI gives an approximate estimate covering the growth of this service in this period with earlier years, revised to conform with the 1930 Census of Agriculture.

TABLE VI

GROWTH OF RURAL ELECTRIFICATION  
IN THE UNITED STATES

Dec. 31 of Year	Electrified Farms	Dec. 31 of Year	Electrified Farms
1923	177,500	1927	392,000
1924	205,000	1928	506,000
1925	246,000	1929	576,000
1926	309,000	1930	649,919
		1931	698,786

Table V shows an analysis of farm service for 1931. Because irrigation pumping in certain regions of the United States is an item of such magnitude as to mask completely all other farm uses, both as to amounts used per farm and prices per kwhr, the table has been set up in two divisions, the second one only being representative of the average performance of the average farm.

Roughly speaking, farms lying west of the hundredth meridian were thrown into the category affected by irrigation. The division is entirely arbitrary and very roughly drawn. Possibly less than  $\frac{1}{5}$  of the farms in the irrigation states do actual pumping, but statistics are not available to make a more accurate separation.

The figures for the average farm east of the 100th meridian are comparable with those reported in 1930 and have the same general trends shown by domestic service. A comparison between these two years may be made as follows.

	1931	1930
Average kwhr per farm.	775	743
Average revenue per kwhr.	6.93c	7.05c
Average annual bill per farm.	\$53.48	\$52.01

TABLE V

## FARM SERVICE, 1931

Reported Figures Extended to Embrace Entire Electric Light and Power Industry

	Number of Farms Served (Dec. 31, 1931)	Kwhr Sold	Revenue
In States West of 100th Meridian (affected by irrigation pumping)	205,557	1,513,344,000	\$25,359,400
In States East of 100th Meridian (not affected by irrigation).....	493,229	365,344,000	25,328,500
Total, all Farm Service.....	698,786	1,878,688,000	\$50,687,900

Note: In the preparation of Tables I and III, farm service not involving irrigation, as set out above, has been included in "domestic service" while farm service involving irrigation has been included in "commercial service—large light and power (wholesale)."

## The Average Electrified Farm, 1931

	Kwhr Sold per Customer	Avg Annual Bill	Revenue per Kwhr
In States West of the 100th Meridian (affected by irrigation pumping)	7,487	\$127.28	1.68c
In States East of the 100th Meridian (not affected by irrigation).....	775	53.48	6.93c

## Fuel Used in Electrical Generation

Table VII shows the fuel used by the electric light and power plants of the country within the scope of this report, which were neither traction companies nor adjuncts of what were primarily industrial concerns. During the year the over-all average efficiency of steam power production showed a further increase of somewhat more

than 4 per cent. Because of this improved efficiency and the diminished output of steam power plants, the actual consumption of fuel showed a decline of about 2,900,000 tons of coal, or its equivalent, a decrease of 6 per cent. Both coal and oil showed a marked decline, but the use of natural gas showed an increase of 18 billion cu ft, or of 15 per cent.

TABLE VII

## FUEL USED FOR ELECTRICAL GENERATION

	1931	1930
Coal (anthracite and bituminous in short tons).....	35,689,000	39,721,000
Oil (in 42 gal bbls).....	7,898,000	8,966,000
Gas (in 1,000 cu ft).....	138,482,000	120,180,000
Total fuel in equivalent short tons of coal.....	44,000,000	46,893,000
Energy generated by use of fuels—net kwhr.....	58,037,649,000	59,387,027,000
Coal (or its equivalent) lb per kwhr.....	1.51	1.58

Sales of Merchandise by Central  
Stations

Table VIII shows the number of

units sold and the gross receipts from the sale of lamps and major electric appliances by the operating light and power enterprises.

TABLE VIII

## MERCHANDISE SALES BY ELECTRIC LIGHT &amp; POWER INDUSTRY, 1931

Appliances	Number of Units Sold	Gross Sales	Gross Sales per Customer*	Approximate Percentage Central Station Sales to Total Sales of Each Appliance†
Lamps**.....	25,896,000	\$ 6,255,400	\$0.42	7
Electric refrigerators.....	164,109	41,668,600	2.49	18
Electric ranges.....	101,621	13,701,600	0.78	84
Electric water heaters.....	20,961	1,786,800	0.10	95
Other electric appliances..	...	36,954,800	2.12 }	15
All other electric sales....	...	12,482,200	0.71 }	
Total.....	...	\$112,849,400	\$6.62	16.8

\* Total of domestic and farm customers. \*\* Not including free renewals.  
† Computed from national totals shown by "Electrical Merchandising."

### The Growth of the Tax Burden on the Electric Light and Power Industry

Governmental expenditures in the United States, federal, state and local, during 1929 (the latest year shown by the National Industrial Conference Board) were, when reduced to a per capita basis, 255 per cent above 1913 figures. Taxation, as shown by the same authority, increased from \$22.66 per capita in 1913 to \$83.21 in 1930, an increase of \$60.55 or 267 per cent. Two-thirds of this increase has been due to state and local governments. State, city and county expenditures have risen from 2 $\frac{1}{4}$  billion dollars in 1913 to almost 10 billion dollars in 1931, indicating that the cost of local government is now nearly five times what it was only 18 years ago.

The electric light and power industry is being called upon to absorb an increasingly larger amount of this local taxation. During these last 18 years, the percentage of revenue paid as taxes has approximately doubled and in 1931 represented 10.6 per cent and recent proposals in the shape of production and sales taxes show a further extension of private utility taxation.

**TABLE IX**  
**RELATION OF TAXES TO GROSS REVENUES**

Year	Total Taxes Paid by Companies	Out of Every Dollar of Consumer Revenue Taxes Take
1902	\$ 2,654,885	3.4 cents
1907	6,345,796	4.2 "
1912	13,117,198	5.2 "
1917	29,897,106	6.9 "
1922	73,128,440	8.4 "
1926	140,400,000	9.3 "
1927	157,000,000	9.4 "
1928	178,000,000	9.9 "
1929	187,500,000	9.7 "
1930	203,500,000	10.2 "
1931	210,000,000	10.6 "

**TABLE X**  
**RELATION OF TAXES TO DOMESTIC ELECTRIC SERVICE**

Year	Total Taxes Paid by Companies	Revenues from Domestic Electric Service (Companies Only)	Ratio of Taxes Paid to Gross Revenue from Domestic Service
1912	\$13,117,198	\$74,000,000	18 per cent
1917	29,897,106	108,000,000	28 " "
1922	73,128,440	256,000,000	29 " "
1926	140,400,000	432,000,000	32 " "
1927	157,000,000	474,000,000	33 " "
1928	178,000,000	518,000,000	34 " "
1929	187,500,000	561,000,000	33 " "
1930	203,500,000	600,000,000	34 " "
1931	210,000,000	613,000,000	34 " "

Tables IX and X shows the growth of taxes paid by electric light and power companies in the United States, as compared with the growth of consumer payments and to net operating revenues.

A further subdivision of the taxes paid by electric light and power companies has been made for 1931 and the general distribution of the grand total of all payments among various agencies is estimated in Table XI.

**TABLE XI**  
**DISTRIBUTION OF ELECTRIC TAXES, 1931**

		Per Cent of All Taxes
Municipal taxes.....	\$ 77,000,000	36.5
County taxes.....	\$ 34,000,000	16.3
Special utility taxes of all kinds.....	\$ 28,000,000	13.2
State taxes.....	\$ 21,000,000	10.1
Total State and Local taxes.....	\$160,000,000	76.1
Federal taxes.....	\$ 50,000,000	23.9
All Taxes.....	\$210,000,000	100

### New Construction, Generating Capacity and Transmission Lines

Expansion of facilities continued during 1931, but at a somewhat diminished scale from previous years. Total gross construction expenditures in 1931 were \$596,740,000, as com-

pared with \$919,417,000 in 1930, the record year of the industry.

Table XII gives the distribution of actual construction expenditures in 1931 and the 5 earlier years.

Because of the present uncertainty of business conditions in general, and of the money market in particular, it is impossible at this time to give any reliable estimate for proposed expenditures during 1932.

Installed generating capacity reached 33,076,900 kw on December 31, 1931, a net increase during the year of 1,027,000 kw, or 3 per cent. This net increase was divided approximately as follows: 396,000 kw in steam plants, an increase of 2 per cent; 759,400 kw in hydro-electric plants, an increase of 9 per cent; and 31,600 kw in internal combustion engines, an increase of 7 $\frac{1}{2}$  per cent. New construction in steam plants was greater than the figure shown, but was offset to a considerable extent by the abandoning and writing-off of a number of older and less efficient stations.

This growth in installed capacity, combined with diminished industrial requirements, resulted in the decreased average use of power plant equipment. All generating plants taken together, the electric light and power industry operated at an average of 30.0 per cent of theoretical capacity for the year as a whole as compared with 32.8

**TABLE XII**  
**CONSTRUCTION EXPENDITURES SINCE 1926**  
**(Total Electric Light and Power Industry)**

	1931	1930	1929	1928	1927	1926
Steam Generating Stations.....	\$104,386,000	\$176,496,000	\$188,211,000	\$136,500,000	\$156,360,000	\$189,058,000
Hydro Generating Stations.....	60,317,000	117,565,000	51,120,000	56,300,000	69,268,000	47,399,000
Substations.....	87,564,000	123,482,000	119,839,000	118,000,000	118,877,000	121,019,000
Transmission.....	101,031,000	139,533,000	145,064,000	129,100,000	140,573,000	115,946,000
Distribution.....	182,158,000	258,699,000	260,751,000	219,800,000	219,962,000	206,209,000
Miscellaneous Electric.....	61,284,000	103,642,000	88,045,000	93,800,000	88,704,000	92,884,000
Total.....	\$596,740,000	\$919,417,000	\$853,030,000	\$753,500,000	\$793,744,000	\$772,515,000



TABLE XIII  
MILES OF TRANSMISSION LINES, BY VOLTAGES  
YEARS 1926-1931, INCLUSIVE

Total Circuit Miles of Transmission Lines (100% of Industry)

	1931	Per Cent of Total 1931	1930	1929	Per Cent of Total 1929	1928	1927	1926	Per Cent of Total 1926
220,000.....	1,955*	1.2	1,811	1,454	1.0	1,454	1,268	1,066	0.9
132,000.....	7,072	4.4	6,929	5,891	4.2	5,424	4,704	4,131	3.6
110,000.....	15,804	9.8	16,147	14,190	10.2	12,698	12,207	11,320	10.0
66,000.....	28,053	17.3	28,073	25,793	18.5	23,505	21,169	17,699	15.7
60,000.....	11,414	7.1	9,396	9,173	6.6	9,179	8,909	8,354	7.4
44,000.....	14,469	8.7	11,248	10,585	7.6	10,095	9,784	8,747	7.7
33,000.....	40,778	25.2	38,501	35,597	25.6	34,857	32,243	30,671	27.2
All others over 22,000.....	24,047	14.8	21,317	20,491	14.7	19,267	19,712	17,468	15.5
22,000.....	18,714	11.5	17,208	16,106	11.6	14,978	13,987	13,551	12.0
Total 22,000 volts or more..	162,306	100.0	150,630	139,280	100.0	131,457	123,983	113,007	100.0
13,200.....	28,840		28,116	25,989		24,489	24,125	23,098	
Over 11,000 but less than 22,000	7,458		7,654	8,347		6,963	6,983	6,929	
11,000.....	12,757		13,771	11,315		10,888	10,041	8,913	
Total.....	211,361		200,171	184,931		173,797	165,132	151,947	

By Voltage Groups

	1931	1930	1929	1928	1927	1926
220,000 volts or more.....	1,955	1,811	1,454	1,454	1,268	1,066
110,000 but less than 220,000.....	25,829	25,705	22,588	20,448	16,170	17,309
66,000 but less than 110,000.....	34,354	31,743	29,218	26,894	25,777	20,714
33,000 but less than 66,000.....	73,535	65,693	61,829	60,017	58,948	53,369
22,000 but less than 33,000.....	26,633	25,678	24,191	22,644	21,820	20,549
11,000 but less than 22,000.....	49,055	49,541	45,651	42,340	41,149	38,940
Total.....	211,361	200,171	184,931	173,797	165,132	151,947

\* Includes 70 miles of 230,000 volt transmission.

per cent during 1930 and the high record of 36.2 per cent in 1929. The "capacity factor" of water power plants decreased from 42.2 per cent in 1930 to 37.0 per cent in 1931, the lowest ratio on record.

The mileage of transmission lines increased substantially in 1931. During the year, 11,190 circuit miles were put in service, as compared with 15,240 miles in 1930 and an average of 11,000 miles for the period 1926 to 1929.

Table XIII, shown above, gives the total circuit miles of transmission lines in service at the close of each year since 1926, grouped according to major classifications. Due to the fact that there seems to be a growing tendency on the part of the reporting companies to consider lines carrying voltages below 22,000 as "distribution systems," it has been thought advisable to make a sub-total in the table for lines of 22,000 or more and to consider this as approximating the preponderance of opinion in the industry as to the present dividing line between transmission and distribution.

In addition to new construction, there seem to have been several important changes in operating voltages

during the current year. Of the total now above 22,000 v, 1,571 circuit miles have been raised from lower voltages and 2,367 miles have been lowered from higher operating voltages. Most of this mileage, however, lies between 60,000 to 66,000 v. Increases in the mileage shown in the table for any particular voltage do not, therefore, always imply that amount of new line built.

During the past 5 years, the mileage of lines carrying 60,000 v or more has increased by 51 per cent, while

the mileage between 22,000 and 60,000 v has increased by 39 per cent and the mileage below 22,000 v has increased by 26 per cent. There thus appears to be a slow but definite trend toward higher operating voltages. During 1931, a line of new high voltage (230,000) was constructed in the East.

This year an analysis of the geographic location of the reported operating voltages has been made and is shown in tabular form as Table F (in the Appendix, page 15).

TABLE XIV  
ACCIDENT EXPERIENCE  
(100% of Electric Light and Power Industry)

Year	Employees Total Number	Fatalities		Lost Time Accidents		Days Lost	
		Total	per 1,000 Employees	Total	per 100 Employees	Total	per 100 Employees
1923	176,000	294	1.68	17,050	9.74	256,960	146.8
1924	200,000	318	1.59	20,000	10.00	290,000	145.0
1925	225,000	405	1.80	20,250	9.00	272,250	121.0
1926	250,000	413	1.65	22,750	9.10	412,500	165.0
1927	275,000	394	1.43	22,550	8.20	390,500	142.0
1928	290,000	409	1.41	21,750	7.50	350,000	120.7
1929	285,000	382	1.34	19,650	6.90	290,130	101.8
1930	285,000	344	1.21	13,700	4.81	230,850	81.0
1931	265,000	252	0.95	9,000	3.40	195,000	73.6

### Accident Prevention Statistics

Table XIV gives the principal statistics of the trend of accident frequency and severity, year by year from 1923 to date. These figures represent estimates for the entire electric light and power industry made upon the assumption that the experience of the companies which accurately reported accident prevention statistics were truly typical of the industry as a whole.

Each year since 1926, the total number of lost-time accidents reported and the total days lost on their account have decreased and the ratio of fatalities to the number of employees has steadily declined since 1925. This continued improvement can probably be ascribed to an awakened and increasing realization of the importance of accident prevention on the part of many executives, to a keener appreciation of the responsibility for safety measures that devolves upon engineers as planners, designers, constructors and operators and, finally, to the employment conditions of the last two years.

This is graphically illustrated on Chart 4, which compares the growth of personnel with the statistics of accidents, with 1923 figures taken as 100 per cent. In 1931, the number

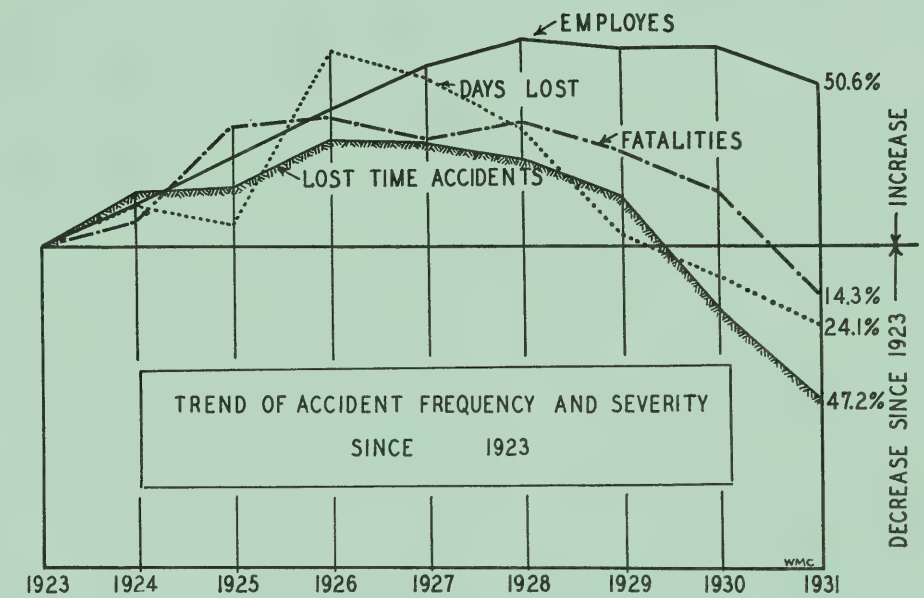


Chart 4

of employees had increased by 50.6 per cent over 1923. On the other hand, number of lost-time accidents were 47.2 per cent fewer than in 1923; total days lost were 24.1 per cent less and the number of fatalities had decreased by 14.3 per cent.

The ratios between the number of employees and their accidents is shown on Chart 5, where the various factors

are expressed in terms of thousands of employees. These are also shown in relationship to the "bogey" set up in 1929 by the N.E.L.A. Accident Prevention Committee as expressing the hoped for results for the next few years.

Similar ratios since 1928, subdivided further according to the various geographic divisions of the country, are shown in tabular form in Table E (in the Appendix, page 14).

### Interstate Transfer of Electricity

In 1931, the total amount of electricity available for distribution to the consumers of light and power was 87,606,000,000 kwhr, exclusive of the energy imported from Canada. Of this amount, 75,112,000,000 kwhr or 85.8 per cent was generated and consumed within the same state. The remaining 14.2 per cent of the total for the country (or 12,488,000,000 kwhr) was transferred across state lines.

This compares with the total of 11,893,000,000 kwhr crossing state lines in 1930 (as shown by the N.E.L.A. Statistical Bulletin No. 7) which was 13.1 per cent of the total available for distribution in that year. The increase in the ratio of interstate to total power in 1931 is thus due to two factors; a decrease of  $3\frac{1}{2}$  per cent in the total amount of electricity available for distribution to consumers, combined with an increase of 5 per cent over the figures of the previous year in the total number of kilowatt-hours actually moving across state lines.

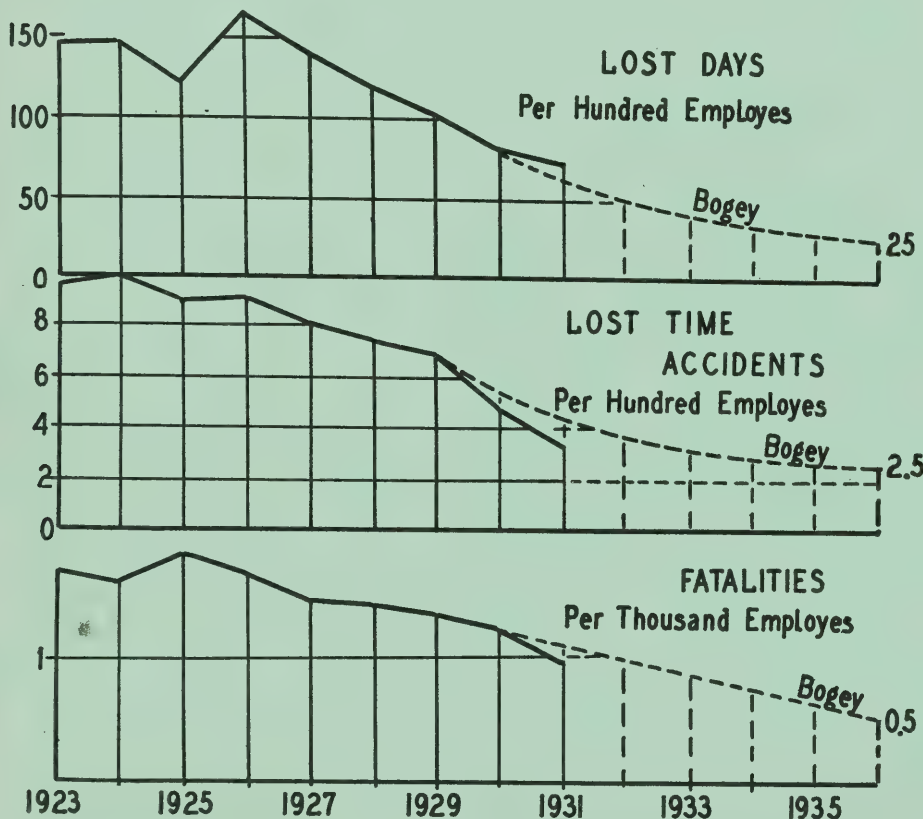


Chart 5

Eight Year Trend and Five Year Bogey, Electrical Utility Accidents



The 595,000,000 kwhr which constitute this growth in interstate power during 1931 may be entirely accounted for by a full year's operation of 3 new plants—Fifteen Mile Falls, Deepwater and Rio Grande—which were separated by state lines from the principal markets for their power, and which were put in service late in 1930. Apart from minor variations, which may be accounted for by fluctuations in the amount of available waterpower or by the effects of the depression upon particular markets for power, the flow of electricity across state boundaries does not reveal any marked changes from the figures of the year before.

Electricity imported from Canada was much less than in the previous year. The total amount imported by the electric light and power industry during 1931 was 795,435,000 kwhr, a decrease of 27 per cent from the 1,084,432,000 kwhr of the previous year.

In many of the states, the interchange of power across state lines shows an approximate balance between

TABLE XVI

Net Interstate Transfer of Electricity in Order of Magnitude, States Exporting or Importing More Than 100,000,000 Kwhr in 1931

Exporting States		
State	Net Exports (Million Kwhr)	Per Cent of Generation*
Indiana.....	710	25.3
Alabama.....	661	40.4
Maryland & D. C.....	673	30.4
Louisiana.....	512	47.8
West Virginia.....	492	26.6
New Jersey.....	484	14.7
Iowa.....	388	26.5
Vermont.....	288	63.2
New Hampshire.....	277	46.8
Idaho.....	276	39.8
Oregon.....	136	11.7
Ohio.....	113	2.1
Washington.....	121	4.7
New Mexico.....	106	58.9
Importing States		
State	Net Imports (Million Kwhr)	Per Cent of Consumption
Pennsylvania.....	1,302	15.2
Missouri.....	910	40.6
Illinois.....	456	6.7
Georgia.....	498	37.1
Massachusetts.....	445	15.5
Utah.....	367	56.8
Arkansas.....	300	71.8
Mississippi.....	235	80.3
Minnesota.....	185	13.5
Tennessee.....	181	17.6
Rhode Island.....	161	26.8
Texas.....	160	5.8
Delaware.....	142	95.9

Note: \* Includes electricity procured from enterprises not considered electric light and power plants.

TABLE XV

IMPORTANT GENERATING PLANTS—SEPARATED BY STATE LINES FROM THE POWER MARKETS FOR WHICH THEY WERE BUILT IN WHOLE OR IN PART, 1931

Name of Plant	Date of Original Installation	Located in State	Supplies Market of	Per Cent of Total Interstate Power Supplied from Each Group—1931
WATER POWER PLANTS				
Fifteen Mile Falls.....	1930	New Hampshire	Industrial Massachusetts	4.5
Vernon.....	1909	New Hampshire		
Davis Bridge.....	1924	Vermont		
Bellows Falls.....	1928	Vermont		
Holtwood.....	(1st Unit 1910) (Last Unit 1914)	Pennsylvania	Southern Pa. and Baltimore, Md.	2
Safe Harbor.....	Dec. 1931	Pennsylvania		
Conowingo.....	1928	Maryland	Philadelphia, Pa.	7
Lake Lynn.....	1926	West Virginia	Pittsburgh, Pa., District	1
Catawba.....	1904	South Carolina	Industrial Piedmont Region of North Carolina	2
Dearborn.....	1922			
Fishing Creek.....	1916			
Rocky Creek.....	1909			
Wateree.....	1921			
Keokuk.....	1906	Iowa	St. Louis, Mo., Industrial Area	3.5
Jim Falls.....	1923	Wisconsin	St. Paul-Minneapolis, Minn.	2
Wissota.....	1923			
St. Croix Falls.....	1910			
Cove.....	1917	Idaho	Salt Lake City, Utah	1
Grace.....	1908			
Oneida.....	1915			
Soda.....	1924			
American Falls.....	1927	Idaho	Salt Lake City, Utah	2
Bartlett's Ferry.....	1926	Alabama	Columbus, Ga.	1.5
Youghiogheny.....	1927	Maryland	Pennsylvania mines	0.5
Chalk Hill Rapids.....	1927	Michigan	Wisconsin	
TOTAL WATER POWER.....				27%
STEAM POWER PLANTS				
State Line.....	1929	Indiana	Chicago Industrial Area	7.5
Sterlington.....	1927	Louisiana	Southern Ark. and Western Miss.	3
Montaup.....	1927	Massachusetts	Rhode Island	1
Lowellville.....	Before 1905	Ohio	Sharon-Mahoning Valleys, Pa.	1.5
Windsor.....	1917	West Virginia	Ohio Industrial district, Pitts- burgh region, Pa.	5
Cahokia.....	1926	Illinois	St. Louis, Mo.	4.5
Glen Lyn.....	1927	Virginia	West Virginia Coal Mines	1
Deepwater.....	1930	New Jersey	Philadelphia, etc., district	4
Rio Grande.....	1930	New Mexico	El Paso, Texas	1
TOTAL STEAM POWER.....				28.5%
GRAND TOTAL, PROPORTION OF TOTAL INTERSTATE POWER.....				55.5%

## SUMMARY

TOTAL INTERSTATE POWER is to total electric supply—14.2%.

Percentage of TOTAL INTERSTATE POWER contributed by the above thirty-four plants—55.5%.

Percentage of TOTAL ELECTRIC SUPPLY contributed by these plants—7.9%.

imports and exports. Of the remainder, with but few exceptions, the large export states are those within which one or more of the interstate power plants listed in Table XV are located. Conversely, the states whose

markets are served by these plants reflect a high import ratio. This is illustrated by Table XVI which shows those states where net exports or net imports of power exceeded 100,000,000 kwhr in 1931.

TABLE A  
GENERATING CAPACITY IN KILOWATTS  
(As of December 31, 1931)

	Steam	Water Power	Internal Combustion	Total
<b>Total United States</b> .....	<b>23,823,017</b>	<b>8,806,096</b>	<b>447,793</b>	<b>33,076,906</b>
Maine .....	70,470	221,669	956	293,095
New Hampshire .....	62,005	222,463	1,420	285,888
Vermont .....	14,110	162,325	.....	176,435
Massachusetts .....	979,270	118,785	3,659	1,101,714
Rhode Island .....	241,200	1,750	.....	242,950
Connecticut .....	463,300	79,085	480	542,865
<i>New England</i> .....	<i>1,830,355</i>	<i>806,077</i>	<i>6,515</i>	<i>2,642,947</i>
New York .....	3,052,380	1,068,128	9,543	4,130,051
New Jersey .....	964,925	950	1,740	967,615
Pennsylvania .....	2,315,155	274,485	10,136	2,599,776
<i>Middle Atlantic</i> .....	<i>6,332,460</i>	<i>1,343,563</i>	<i>21,419</i>	<i>7,697,442</i>
Ohio .....	2,107,932	12,675	1,410	2,122,017
Indiana .....	971,800	35,370	3,807	1,010,977
Illinois .....	2,485,551	46,155	4,940	2,536,646
Michigan .....	1,299,745	286,402	8,641	1,594,788
Wisconsin .....	602,983	246,550	8,264	857,797
<i>East North Central</i> .....	<i>7,468,011</i>	<i>627,152</i>	<i>27,062</i>	<i>8,122,225</i>
Minnesota .....	334,321	130,766	12,899	477,986
Iowa .....	391,137	150,503	24,909	566,549
Missouri .....	575,557	149,105	25,034	749,696
North Dakota .....	55,173	.....	4,171	59,344
South Dakota .....	45,148	4,200	14,257	63,605
Nebraska .....	194,468	10,846	28,564	233,878
Kansas .....	324,782	6,942	41,932	373,656
<i>West North Central</i> .....	<i>1,920,586</i>	<i>452,362</i>	<i>161,766</i>	<i>2,524,714</i>
Delaware .....	6,350	.....	915	7,265
Maryland .....	340,710	271,980	2,657	615,347
Dist. of Columbia .....	208,000	.....	.....	208,000
Virginia .....	321,554	96,097	5,046	422,697
West Virginia .....	467,622	56,105	4,395	528,122
North Carolina .....	339,695	396,766	5,514	741,975
South Carolina .....	147,813	538,630	770	687,213
Georgia .....	134,054	291,482	2,035	427,571
Florida .....	318,826	14,450	25,915	359,191
<i>South Atlantic</i> .....	<i>2,284,624</i>	<i>1,665,510</i>	<i>47,247</i>	<i>3,997,381</i>
Kentucky .....	231,692	105,175	1,855	338,722
Tennessee .....	211,392	128,771	3,362	343,525
Alabama .....	245,715	451,250	4,201	701,166
Mississippi .....	45,917	.....	14,313	60,230
<i>East South Central</i> .....	<i>734,716</i>	<i>685,196</i>	<i>23,731</i>	<i>1,443,643</i>
Arkansas .....	74,643	66,855	7,457	148,955
Louisiana .....	246,352	.....	17,780	264,132
Oklahoma .....	300,905	1,700	30,469	333,074
Texas .....	855,698	7,960	64,584	928,242
<i>West South Central</i> .....	<i>1,477,698</i>	<i>76,515</i>	<i>120,290</i>	<i>1,674,403</i>
Montana .....	8,238	299,494	1,779	309,511
Idaho .....	600	204,540	1,010	206,150
Wyoming .....	22,607	2,230	3,180	28,017
Colorado .....	142,400	51,911	5,357	199,668
New Mexico .....	76,706	988	7,097	84,791
Arizona .....	32,979	77,050	18,776	128,805
Utah .....	41,000	97,230	1,900	140,130
Nevada .....	350	8,991	1,436	10,777
<i>Mountain</i> .....	<i>324,880</i>	<i>742,434</i>	<i>40,535</i>	<i>1,107,849</i>
Washington .....	190,662	666,311	999	857,972
Oregon .....	155,150	168,124	2,015	325,289
California .....	1,103,975	1,572,852	6,214	2,683,041
<i>Pacific</i> .....	<i>1,449,787</i>	<i>2,407,287</i>	<i>9,228</i>	<i>3,866,302</i>



TABLE B  
KILOWATTHOURS GENERATED (NET), 1931

	By Fuels	By Water Power	Total
<b>Total United States</b> .....	<b>58,037,649,000</b>	<b>27,537,658,000</b>	<b>85,575,307,000</b>
Maine.....	31,766,000	771,552,000	803,318,000
New Hampshire.....	81,649,000	511,272,000	592,921,000
Vermont.....	6,000	456,278,000	456,284,000
Massachusetts.....	1,928,245,000	479,323,000	2,407,568,000
Rhode Island.....	432,888,000	3,476,000	436,364,000
Connecticut.....	942,415,000	219,856,000	1,162,271,000
<i>New England</i> .....	<i>3,416,969,000</i>	<i>2,441,757,000</i>	<i>5,858,726,000</i>
New York.....	6,683,765,000	4,572,961,000	11,256,726,000
New Jersey.....	3,279,696,000	2,346,000	3,282,042,000
Pennsylvania.....	6,573,295,000	659,417,000	7,232,712,000
<i>Middle Atlantic</i> .....	<i>16,536,756,000</i>	<i>5,234,724,000</i>	<i>21,771,480,000</i>
Ohio.....	5,411,322,000	23,145,000	5,434,467,000
Indiana.....	2,723,296,000	79,993,000	2,803,289,000
Illinois.....	6,084,282,000	219,893,000	6,304,175,000
Michigan.....	3,017,623,000	683,463,000	3,701,086,000
Wisconsin.....	1,203,386,000	774,967,000	1,978,353,000
<i>East North Central</i> .....	<i>18,439,909,000</i>	<i>1,781,461,000</i>	<i>20,221,370,000</i>
Minnesota.....	708,474,000	435,412,000	1,143,886,000
Iowa.....	829,441,000	631,752,000	1,461,193,000
Missouri.....	1,173,712,000	160,493,000	1,334,205,000
North Dakota.....	137,196,000	.....	137,196,000
South Dakota.....	93,007,000	9,194,000	102,201,000
Nebraska.....	558,391,000	36,799,000	595,190,000
Kansas.....	899,115,000	18,653,000	917,768,000
<i>West North Central</i> .....	<i>4,399,336,000</i>	<i>1,292,303,000</i>	<i>5,691,639,000</i>
Delaware.....	5,468,000	.....	5,468,000
Maryland.....	799,714,000	893,950,000	1,693,664,000
Dist. of Columbia.....	519,295,000	.....	519,295,000
Virginia.....	813,230,000	238,087,000	1,051,317,000
West Virginia.....	1,685,887,000	164,798,000	1,850,685,000
North Carolina.....	336,568,000	893,345,000	1,229,913,000
South Carolina.....	213,434,000	1,158,722,000	1,372,156,000
Georgia.....	157,328,000	680,928,000	838,256,000
Florida.....	608,733,000	33,701,000	642,434,000
<i>South Atlantic</i> .....	<i>5,139,657,000</i>	<i>4,063,531,000</i>	<i>9,203,188,000</i>
Kentucky.....	334,050,000	410,384,000	744,434,000
Tennessee.....	288,791,000	513,633,000	802,424,000
Alabama.....	119,037,000	1,515,645,000	1,634,682,000
Mississippi.....	53,049,000	.....	53,049,000
<i>East South Central</i> .....	<i>794,927,000</i>	<i>2,439,662,000</i>	<i>3,234,589,000</i>
Arkansas.....	66,801,000	37,096,000	103,897,000
Louisiana.....	1,070,549,000	.....	1,070,549,000
Oklahoma.....	779,974,000	3,092,000	783,066,000
Texas.....	2,481,779,000	36,413,000	2,518,192,000
<i>West South Central</i> .....	<i>4,399,103,000</i>	<i>76,601,000</i>	<i>4,475,704,000</i>
Montana.....	18,797,000	946,095,000	964,892,000
Idaho.....	153,000	692,624,000	692,777,000
Wyoming.....	53,244,000	3,469,000	56,713,000
Colorado.....	299,418,000	184,989,000	484,407,000
New Mexico.....	177,650,000	2,008,000	179,658,000
Arizona.....	128,684,000	265,177,000	393,861,000
Utah.....	105,491,000	170,992,000	276,483,000
Nevada.....	3,112,000	15,915,000	19,027,000
<i>Mountain</i> .....	<i>786,549,000</i>	<i>2,281,269,000</i>	<i>3,067,818,000</i>
Washington.....	66,623,000	2,480,613,000	2,547,236,000
Oregon.....	412,776,000	752,024,000	1,164,800,000
California.....	3,645,044,000	4,693,713,000	8,338,757,000
<i>Pacific</i> .....	<i>4,124,443,000</i>	<i>7,926,350,000</i>	<i>12,050,793,000</i>

TABLE C  
INTERSTATE TRANSFER OF ELECTRICITY, 1931

	Total Consumption of Electricity* (Million Kwhr)	Imported into State (Million Kwhr)	Interstate Power			
			Per Cent of Consumption			
			1931	1930	1929	1928
<b>Total United States . . . .</b>	<b>87,606</b>	<b>12,488</b>	<b>14.2</b>	<b>13.1</b>	<b>11.8</b>	<b>10.7</b>
Maine . . . . .	807	1	0.1	0.1	0.2	0.1
New Hampshire . . . . .	324	23	7.1	7.0	6.0	3.9
Vermont . . . . .	182	18	10.1	7.3	10.7	11.3
Massachusetts . . . . .	2,874	843	29.3	25.2	19.4	18.8
Rhode Island . . . . .	601	282	47.1	43.4	25.9	25.0
Connecticut . . . . .	1,197	133	11.1	8.2	7.5	9.5
<i>New England . . . . .</i>	<i>5,985</i>	<i>1,301</i>	<i>22.1</i>	<i>19.0</i>	<i>14.4</i>	<i>14.5</i>
New York** . . . . .	11,238	93	0.8	0.8	0.6	0.5
New Jersey . . . . .	2,816	382	13.6	13.5	19.0	12.0
Pennsylvania . . . . .	8,573	2,293	26.7	23.8	23.0	17.6
<i>Middle Atlantic** . . . . .</i>	<i>22,627</i>	<i>2,768</i>	<i>12.2</i>	<i>10.7</i>	<i>10.8</i>	<i>8.7</i>
Ohio . . . . .	5,471	510	9.3	5.8	8.5	10.1
Indiana . . . . .	2,135	295	13.8	15.4	10.5	11.9
Illinois . . . . .	6,839	1,128	16.5	16.5	9.1	4.5
Michigan . . . . .	3,764	96	2.6	3.8	2.2	2.0
Wisconsin . . . . .	1,923	221	11.5	11.0	8.5	7.0
<i>East North Central . . . . .</i>	<i>20,132</i>	<i>2,250</i>	<i>11.2</i>	<i>10.5</i>	<i>7.6</i>	<i>6.5</i>
Minnesota . . . . .	1,373	276	20.1	21.0	25.9	31.5
Iowa . . . . .	1,082	57	5.3	4.6	5.2	6.0
Missouri . . . . .	2,244	958	41.6	47.7	47.5	51.6
North Dakota . . . . .	118	2	1.7	3.8	7.1	8.9
South Dakota . . . . .	124	28	22.7	10.1	9.1	8.9
Nebraska . . . . .	560	5	0.1	...	0.4	0.3
Kansas . . . . .	827	45	5.4	4.8	4.5	5.1
<i>West North Central . . . . .</i>	<i>6,328</i>	<i>1,371</i>	<i>21.6</i>	<i>23.6</i>	<i>25.1</i>	<i>27.8</i>
Delaware . . . . .	148	146	99.2	90.4	66.2	32.0
Maryland & D. C. . . . .	1,568	315	29.7	20.0	24.2	41.8
Virginia . . . . .	1,103	189	12.2	16.4	11.9	7.3
West Virginia . . . . .	1,360	444	32.6	25.8	31.6	23.7
N & S Carolina . . . . .	2,634	520	19.8	19.5	18.9	16.8
Georgia . . . . .	1,340	660	49.3	38.7	27.2	28.5
Florida . . . . .	653	25	4.0	3.6	3.2	2.9
<i>South Atlantic . . . . .</i>	<i>8,806</i>	<i>2,300</i>	<i>26.2</i>	<i>23.7</i>	<i>24.2</i>	<i>22.6</i>
Kentucky . . . . .	818	239	29.2	27.2	32.0	32.2
Tennessee . . . . .	1,028	344	33.5	29.5	8.0	1.2
Alabama . . . . .	1,351	63	4.7	3.6	4.5	0.6
Mississippi . . . . .	293	235	80.4	76.2	73.6	47.9
<i>East South Central . . . . .</i>	<i>3,489</i>	<i>881</i>	<i>25.3</i>	<i>22.6</i>	<i>15.3</i>	<i>9.0</i>
Arkansas . . . . .	418	322	77.1	78.0	64.1	27.6
Louisiana . . . . .	723	12	1.7	10.1	6.0	3.4
Oklahoma . . . . .	837	100	12.0	13.3	9.1	17.1
Texas . . . . .	2,756	222	8.0	0.9	0.4	0.1
<i>West South Central . . . . .</i>	<i>4,735</i>	<i>656</i>	<i>13.9</i>	<i>11.4</i>	<i>8.6</i>	<i>6.3</i>
Montana . . . . .	966	1	0.1	...	0.4	...
Idaho . . . . .	441	131	29.7	26.4	26.7	21.9
Wyoming . . . . .	73	1	1.9	1.8	...	...
Colorado . . . . .	488	...	...	...	0.4	...
New Mexico . . . . .	76	4	5.9	11.5	14.5	7.4
Arizona . . . . .	415	10	2.5	2.7	1.4	2.7
Utah . . . . .	646	368	57.0	60.5	64.9	54.7
Nevada . . . . .	84	65	77.9	54.7	43.3	55.4
<i>Mountain . . . . .</i>	<i>3,189</i>	<i>581</i>	<i>18.2</i>	<i>17.3</i>	<i>17.8</i>	<i>16.4</i>
Washington . . . . .	2,448	72	2.9	3.7	4.2	5.6
Oregon . . . . .	1,067	121	11.3	7.7	4.0	8.7
California . . . . .	8,799	186	2.1	1.5	0.6	...
<i>Pacific . . . . .</i>	<i>12,314</i>	<i>379</i>	<i>3.1</i>	<i>2.5</i>	<i>1.6</i>	<i>1.8</i>

Notes: \*"Consumption" is here defined as the sum total of electricity available for distribution to all consumers of light, heat and power. It is derived as follows:

Generated by electric light and power plants . . . . .

Add: Procured from enterprises not public utilities . . . . .

Add: Imported from adjacent States . . . . .

Total . . . . .

Subtract: Exported to adjacent States . . . . .

Balance: "Consumption" in State . . . . .

\*\* Not including electricity imported from Canada.



TABLE D  
EXPORTS OF ELECTRICITY ACROSS STATE LINES  
ELECTRIC LIGHT & POWER COMPANIES—UNITED STATES, 1931

	Power Generated*	Power Exported	Exported Power Is Per Cent of Generation			
	(Millions Kwhr)	(Millions Kwhr)	1931	1930	1929	1928
<b>Total United States..</b>	<b>85,575</b>	<b>12,488</b>	<b>14.2</b>	<b>13.1(a)</b>	<b>11.8(b)</b>	<b>10.7(c)</b>
Maine.....	803	1	..	..	..	..
New Hampshire.....	593	300	50.7	25.4	16.5	25.8
Vermont.....	456	306	49.0	67.4	64.6	71.9
Massachusetts.....	2,408	398	16.5	13.4	10.6	10.9
Rhode Island.....	436	121	27.8	42.3	30.5	2.1
Connecticut.....	1,162	102	8.8	7.4	2.0	2.7
<i>New England.....</i>	<i>5,859</i>	<i>1,229</i>	<i>21.0</i>	<i>19.0</i>	<i>13.8</i>	<i>13.1</i>
New York.....	11,257	192	1.7	1.1	1.2	1.8
New Jersey.....	3,282	866	26.4	17.2	0.8	1.4
Pennsylvania.....	7,233	991	13.7	12.4	13.9	11.2
<i>Middle Atlantic....</i>	<i>21,772</i>	<i>2,049</i>	<i>9.4</i>	<i>7.3</i>	<i>5.8</i>	<i>5.4</i>
Ohio.....	5,434	623	11.5	7.5	7.8	6.6
Indiana.....	2,803	1,005	35.8	36.3	21.3	7.7
Illinois.....	6,304	672	10.7	13.0	9.7	10.5
Michigan.....	3,701	78	2.1	3.6	2.6	1.5
Wisconsin.....	1,978	305	15.4	15.5	18.4	21.0
<i>East North Central..</i>	<i>20,221</i>	<i>2,683</i>	<i>13.3</i>	<i>13.2</i>	<i>9.9</i>	<i>8.4</i>
Minnesota.....	1,144	91	7.9	6.4	6.4	7.3
Iowa.....	1,461	445	30.5	33.1	38.7	45.1
Missouri.....	1,334	48	3.6	3.3	3.7	4.0
North Dakota.....	137	21	15.5	15.4	13.3	15.3
South Dakota.....	102	7	6.4	4.5	7.4	2.9
Nebraska.....	595	49	8.3	7.3	8.3	9.3
Kansas.....	918	135	14.8	18.4	17.7	15.4
<i>West North Central..</i>	<i>5,692</i>	<i>796</i>	<i>14.0</i>	<i>15.1</i>	<i>16.8</i>	<i>19.9</i>
Delaware.....	5	4	79.0	21.5	7.6	14.7
Maryland & D. C.....	2,213	988	44.7	45.6	54.0	49.5
Virginia.....	1,051	148	14.1	21.0	22.3	19.0
West Virginia.....	1,851	936	50.6	45.4	54.0	46.2
N & S Carolina.....	2,602	692	26.8	19.0	20.5	17.8
Georgia.....	838	162	19.3	19.9	11.7	8.6
Florida.....	642	22	3.5	3.7	3.6	3.0
<i>South Atlantic.....</i>	<i>9,203</i>	<i>2,953</i>	<i>32.1</i>	<i>31.0</i>	<i>36.0</i>	<i>32.7</i>
Kentucky.....	744	166	22.3	16.0	16.1	11.8
Tennessee.....	802	163	20.3	9.0	2.3	2.9
Alabama.....	1,635	724	44.3	34.4	21.9	25.0
Mississippi.....	53	..	0.5	..	1.7	2.0
<i>East South Central..</i>	<i>3,235</i>	<i>1,053</i>	<i>32.6</i>	<i>24.4</i>	<i>15.0</i>	<i>15.3</i>
Arkansas.....	104	22	21.6	17.9	13.7	14.7
Louisiana.....	1,071	524	49.0	41.7	39.2	32.1
Oklahoma.....	783	47	6.0	5.1	3.7	1.9
Texas.....	2,518	62	2.5	4.1	3.1	1.9
<i>West South Central..</i>	<i>4,476</i>	<i>656</i>	<i>14.6</i>	<i>12.4</i>	<i>10.8</i>	<i>8.5</i>
Montana.....	965	4	0.4	0.3	0.3	0.2
Idaho.....	693	407	58.8	59.5	62.2	67.5
Wyoming.....	57	..	..	..	..	..
Colorado.....	484	..	0.3	1.1	1.0	1.0
New Mexico.....	180	110	61.5	4.8	4.5	9.6
Arizona.....	394	..	..	..	..	..
Utah.....	276	1	0.5	0.4	0.3	..
Nevada.....	19	2	9.8	9.7	6.8	5.6
<i>Mountain.....</i>	<i>3,068</i>	<i>525</i>	<i>17.1</i>	<i>14.4</i>	<i>13.7</i>	<i>15.7</i>
Washington.....	2,547	193	7.6	5.0	9.5	5.2
Oregon.....	1,165	257	22.0	17.8	13.3	12.4
California.....	8,339	94	1.1	1.0	0.8	0.5
<i>Pacific.....</i>	<i>12,051</i>	<i>544</i>	<i>4.5</i>	<i>3.5</i>	<i>3.8</i>	<i>2.6</i>

Note: \* Includes electricity procured from enterprises not considered electric light and power plants.

(a) N.E.L.A. Statistical Bulletin No. 7.

(b) N.E.L.A. Statistical Bulletin No. 5.

(c) N.E.L.A. Statistical Bulletin No. 4.

TABLE E  
ANALYSIS OF ACCIDENT STATISTICS AS REPORTED BY 354 COMPANIES BY N. E. L. A.  
GEOGRAPHIC DIVISIONS, 1931

No. of Cos.	Number of Employees	Fatal Accidents	Lost Time Accidents	Days Lost	Cost of Accidents	1931	Ratios 1930	1929
<b>Total United States</b>								
354	248,534	240	...	...	...	0.97	1.21	1.34
354	248,534	...	8,377	...	...	3.37	4.86	6.90
351	237,539	...	...	174,308	...	73	81	101
284	160,213	...	...	...	\$3,168,308	\$19.78	\$21.04	\$22.14
<b>New England</b>								
28	15,648	21	...	...	...	1.34	0.74	1.64
28	15,648	...	580	...	...	3.71	4.66	7.87
28	15,648	...	...	9,964	...	64	78	149
21	9,882	...	...	...	\$179,540	\$18.17	\$19.59	\$18.67
<b>Eastern</b>								
39	84,783	65	...	...	...	0.77	0.58	0.91
39	84,783	...	2,737	...	...	3.23	3.84	5.54
38	74,437	...	...	44,442	...	60	53	74
29	29,223	...	...	...	\$466,502	\$15.96	\$17.57	\$22.11
<b>East Central</b>								
33	18,660	20	...	...	...	1.07	2.01	2.21
33	18,660	...	565	...	...	3.03	5.86	7.91
33	18,660	...	...	12,795	...	69	97	120
27	14,763	...	...	...	\$417,844	\$28.30	\$23.57	\$37.37
<b>Great Lakes</b>								
60	38,053	34	...	...	...	0.89	1.18	1.25
60	38,053	...	988	...	...	2.60	3.93	5.57
60	38,053	...	...	20,481	...	54	76	89
53	32,633	...	...	...	\$671,013	\$20.56	\$20.94	\$26.76
<b>North Central</b>								
12	5,533	6	...	...	...	1.08	1.39	1.82
12	5,533	...	239	...	...	4.32	4.76	7.63
12	5,533	...	...	6,684	...	121	74	100
9	5,270	...	...	...	\$152,604	\$28.96	\$16.81	\$20.76
<b>Middle West</b>								
37	11,574	17	...	...	...	1.47	2.52	0.83
37	11,574	...	524	...	...	4.53	6.23	9.59
36	11,407	...	...	11,011	...	97	113	102
32	11,139	...	...	...	\$215,437	\$19.34	\$23.71	\$61.60
<b>Middle Atlantic</b>								
12	5,631	8	...	...	...	1.42	1.55	1.01
12	5,631	...	232	...	...	4.12	5.93	9.12
12	5,631	...	...	4,506	...	80	83	98
12	5,631	...	...	...	\$122,884	\$21.82	\$18.94	\$15.79
<b>Southeastern</b>								
37	16,658	17	...	...	...	1.02	1.21	1.75
37	16,658	...	405	...	...	2.43	3.64	5.08
37	16,658	...	...	8,847	...	53	53	62
32	15,910	...	...	...	\$234,548	\$14.74	\$18.89	\$19.52
<b>Southwestern</b>								
33	17,088	20	...	...	...	1.17	1.81	2.17
33	17,088	...	689	...	...	4.03	5.52	9.58
33	17,088	...	...	11,212	...	66	77	118
25	14,365	...	...	...	\$247,102	\$17.20	\$32.88	\$33.70
<b>Northwest</b>								
25	9,842	11	...	...	...	1.12	1.82	2.01
25	9,842	...	429	...	...	4.36	8.44	8.04
25	9,842	...	...	9,591	...	97	122	186
20	8,627	...	...	...	\$255,969	\$29.67	\$22.52	\$20.50
<b>Rocky Mountain</b>								
17	2,510	3	...	...	...	1.20	1.02	2.05
17	2,510	...	87	...	...	3.47	6.61	15.54
17	2,510	...	...	2,719	...	108	109	112
12	2,292	...	...	...	\$35,365	\$15.43	\$21.37	\$12.31
<b>Pacific Coast</b>								
21	22,454	18	...	...	...	0.80	1.52	1.38
21	22,454	...	902	...	...	4.00	7.07	7.75
20	22,272	...	...	32,056	...	142	164	161
12	10,478	...	...	...	\$169,500	\$16.15	\$13.08	\$18.19



TABLE F  
TRANSMISSION LINES  
NUMBER OF COMPANIES AND CIRCUIT MILES OF TRANSMISSION LINES  
DISTRIBUTED BY VOLTAGE AND GEOGRAPHIC LOCATION  
(As of Dec. 31, 1931)

Voltages	Number of Companies Reporting										Circuit Miles of Transmission Lines Reported									
	N. E.	M. A.	E. N. C.	W. N. C.	S. A.	E. S. C.	W. S. C.	Mt.	Pac.	U. S.	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	Total U. S.
220,000	2	4	..	..	1	..	..	..	2	9	253	361	..	..	14	..	..	..	1,327	1,955
165,000	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	398	398
154,000	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	414	..	..	..	414
140,000	..	..	1	..	..	..	..	..	..	1	..	..	873	..	..	..	..	..	..	873
138,000	..	..	1	..	..	..	..	..	..	1	..	..	41	..	..	..	..	..	..	41
132,000	..	6	27	4	6	3	3	2	2	53	..	794	3,857	797	673	64	560	272	55	7,072
130,000	..	..	..	..	..	..	..	2	..	2	..	..	..	..	..	..	..	503	..	503
120,000	..	..	1	..	..	..	..	..	..	1	..	..	546	..	..	..	..	..	..	546
115,000	..	..	..	..	1	..	..	..	..	1	..	..	..	..	178	..	..	..	..	178
110,000	7	14	3	4	8	7	4	2	10	59	856	3,532	571	428	2,241	2,652	1,017	508	3,999	15,804
100,000	..	..	..	..	3	..	..	1	2	6	..	..	..	..	3,089	..	..	799	678	4,566
90,000	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	306	..	306
88,000	..	1	2	..	4	1	..	..	2	10	..	107	87	..	271	2	..	..	486	953
75,000	..	..	1	..	..	..	..	..	..	1	..	..	107	..	..	..	..	..	..	107
70,000	..	1	..	..	..	..	..	..	..	1	..	306	..	..	..	..	..	..	..	306
69,000	..	..	1	..	..	..	..	..	..	1	..	..	63	..	..	..	..	..	..	63
66,000	15	18	35	19	19	7	24	5	11	153	2,109	2,766	5,107	1,658	4,081	1,242	7,274	498	3,318	28,053
60,000	..	2	..	4	2	..	7	3	6	24	..	599	..	1,084	469	..	2,763	849	5,650	11,414
57,600	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	4	4
57,000	..	..	..	..	..	..	..	1	1	2	..	..	..	..	..	..	..	88	390	478
55,000	..	..	..	..	..	..	..	1	3	4	..	..	..	..	..	..	..	215	873	1,088
50,000	1	..	..	1	..	..	..	1	..	3	26	..	..	80	..	..	..	1,381	..	1,487
45,000	..	2	1	..	..	..	..	3	2	8	..	44	81	..	..	..	..	295	80	500
44,000	6	4	3	2	11	6	1	15	..	48	325	1,166	1,005	352	4,475	3,544	83	3,519	..	14,469
40,000	..	..	1	2	..	..	..	..	..	3	..	..	8	1,604	..	..	..	..	..	1,612
39,000	..	..	1	..	..	..	..	..	..	1	..	..	134	..	..	..	..	..	..	134
38,000	1	..	..	1	1	..	1	..	1	5	137	..	..	304	749	..	334	..	38	1,562
37,500	..	..	1	..	..	..	..	..	..	1	..	..	9	..	..	..	..	..	..	9
33,000	15	25	46	43	23	8	26	7	7	200	2,069	4,365	10,973	10,778	2,691	2,182	5,086	882	1,752	40,778
27,500	..	..	2	..	..	..	..	..	..	2	..	..	333	..	..	..	..	..	..	333
26,400	..	4	4	..	..	..	..	..	..	8	..	834	959	..	..	..	..	..	..	1,793
26,000	..	..	..	2	1	..	..	..	..	3	..	..	..	139	104	..	..	..	..	243
25,000	..	2	2	..	..	..	..	..	..	4	..	1,411	115	..	..	..	..	..	..	1,526
24,000	2	..	1	..	..	..	..	..	1	4	127	..	2,121	..	..	..	..	..	132	2,380
23,000	1	2	4	1	3	1	1	2	3	18	33	90	588	269	284	83	48	174	75	1,644
22,000	14	10	13	17	13	6	9	11	7	100	744	3,784	1,940	4,950	1,911	479	2,707	1,571	628	18,714
Total	31	35	72	53	43	18	43	33	23	351	6,679	20,159	29,518	22,443	21,230	10,662	19,872	11,860	19,883	162,306

TABLE G  
TOTAL NUMBER OF CUSTOMERS SERVED  
BY CLASS OF SERVICE  
1925-1931

	Farm Service*		Domestic Service	Commercial Service		All Others	Total Ultimate Consumers
	East of 100th Meridian	West of 100th Meridian		Small Light & Power	Large Light & Power		
As of December 31, 1931	493,229	205,557	19,658,018	3,724,013	348,260	60,693	24,489,770
Actual Number Added During Year 1931	+42,007	+6,860	+92,276	+12,653	-2,544	+1,952	+153,204
(Due to reclassification of customers during 1931 the following are not strictly comparable)							
As of December 31, 1930	451,222	198,697	19,880,329	3,625,653	346,737	53,094	24,555,732
" " " 31, 1929	395,548	180,620	19,569,606	3,594,115	368,048	42,246	24,150,183
" " " 31, 1928	339,600	166,642	18,748,282	3,527,489	341,315	31,924	23,155,252
" " " 31, 1927	254,871	138,350	17,696,063	3,356,140	312,627	28,161	21,786,212
" " " 31, 1926	190,512	118,613	16,516,109	3,154,530	282,832	32,862	20,295,458
" " " 31, 1925	153,300	92,850	15,123,304	2,927,388	271,081	32,589	18,600,512

\* Farms served in the West South Central, the Mountain and Pacific States may involve irrigation and "Farm Service" in those states which are approximately west of the 100th Meridian is shown separately. These farms were formerly included in published reports under "Commercial—Large Light & Power." Farms in states approximately east of the 100th Meridian were formerly included under "Domestic Service."



TABLE H  
NUMBER OF CUSTOMERS  
(As of December 31, 1931)

	Farm Service	Domestic Service	Commercial Small	Commercial Large	Street Lighting	All Others	Total
<b>Total United States*</b> .....	<b>698,786</b>	<b>19,658,018</b>	<b>3,724,013</b>	<b>348,260</b>	<b>34,426</b>	<b>26,267</b>	<b>24,489,770</b>
Maine .....	12,888	140,894	31,140	4,416	348	917	190,603
New Hampshire .....	6,528	95,216	16,043	2,949	164	675	121,575
Vermont .....	7,461	57,983	11,448	2,280	286	1	79,459
Massachusetts .....	14,289	962,493	170,191	17,405	320	584	1,165,282
Rhode Island .....	1,974	160,482	24,493	3,248	120	2	190,319
Connecticut .....	9,097	388,401	58,729	8,859	225	81	465,392
<i>New England</i> .....	<i>52,237</i>	<i>1,806,469</i>	<i>312,044</i>	<i>39,157</i>	<i>1,463</i>	<i>2,260</i>	<i>2,212,630</i>
New York .....	51,439	3,037,111	668,921	30,293	1,572	3,918	3,793,254
New Jersey .....	12,005	963,782	154,103	41,051	687	704	1,172,332
Pennsylvania .....	41,467	1,703,610	281,066	41,559	4,726	1,284	2,073,712
<i>Middle Atlantic</i> .....	<i>104,911</i>	<i>5,704,503</i>	<i>1,104,090</i>	<i>112,903</i>	<i>6,985</i>	<i>5,906</i>	<i>7,039,298</i>
Ohio .....	45,730	1,248,540	189,082	17,378	1,669	1,732	1,504,131
Indiana .....	22,106	568,050	92,188	13,482	1,120	28	696,974
Illinois .....	26,994	1,567,613	271,501	12,299	2,787	2,676	1,883,870
Michigan .....	34,230	880,603	166,398	3,127	776	214	1,085,348
Wisconsin .....	37,833	491,011	97,385	13,506	687	808	641,230
<i>East North Central</i> .....	<i>166,893</i>	<i>4,755,817</i>	<i>816,554</i>	<i>59,792</i>	<i>7,039</i>	<i>5,458</i>	<i>5,811,553</i>
Minnesota .....	14,206	363,918	65,637	18,266	663	667	463,357
Iowa .....	31,688	366,589	64,302	2,725	960	908	467,172
Missouri .....	16,416	535,039	107,147	5,106	458	954	655,120
North Dakota .....	1,834	46,945	16,844	2,352	260	99	68,334
South Dakota .....	3,040	61,382	15,379	3,021	308	709	83,839
Nebraska .....	9,930	193,136	36,191	4,940	381	882	245,460
Kansas .....	12,603	275,799	55,597	3,465	636	295	348,395
<i>West North Central</i> .....	<i>89,717</i>	<i>1,842,808</i>	<i>361,097</i>	<i>39,875</i>	<i>3,666</i>	<i>4,514</i>	<i>2,341,677</i>
Delaware .....	1,296	39,143	7,773	436	89	.....	48,737
Maryland .....	6,961	277,984	38,939	1,740	165	13	325,802
Dist. of Columbia .....	70	114,492	15,904	239	2	.....	130,707
Virginia .....	11,972	206,886	39,156	3,669	251	1,026	262,960
West Virginia .....	3,307	152,392	32,403	2,601	236	389	191,328
North Carolina .....	10,083	206,896	40,747	3,607	919	527	262,779
South Carolina .....	3,746	83,328	21,558	1,312	311	221	110,476
Georgia .....	5,309	167,844	45,996	1,001	514	230	220,894
Florida .....	5,214	195,004	47,157	2,887	1,443	279	251,984
<i>South Atlantic</i> .....	<i>47,958</i>	<i>1,443,969</i>	<i>289,633</i>	<i>17,492</i>	<i>3,930</i>	<i>2,685</i>	<i>1,805,667</i>
Kentucky .....	7,716	220,602	47,932	4,869	380	462	281,961
Tennessee .....	7,996	198,168	47,235	2,341	206	700	256,646
Alabama .....	12,326	135,978	35,630	1,155	186	33	185,308
Mississippi .....	3,475	67,914	22,548	1,089	758	488	96,272
<i>East South Central</i> .....	<i>31,513</i>	<i>622,662</i>	<i>153,345</i>	<i>9,454</i>	<i>1,530</i>	<i>1,683</i>	<i>820,187</i>
Arkansas .....	3,253	92,529	25,316	1,512	873	149	123,632
Louisiana .....	2,447	169,103	33,166	1,669	715	83	207,183
Oklahoma .....	4,927	215,191	48,308	11,770	596	1,160	281,952
Texas .....	11,543	530,704	134,166	3,465	2,018	1,679	683,575
<i>West South Central</i> .....	<i>22,170</i>	<i>1,007,527</i>	<i>240,956</i>	<i>18,416</i>	<i>4,202</i>	<i>3,071</i>	<i>1,296,342</i>
Montana .....	2,377	66,410	14,527	671	154	8	84,147
Idaho .....	12,402	51,377	11,358	445	118	13	75,713
Wyoming .....	523	26,267	6,059	757	33	3	33,642
Colorado .....	7,170	164,225	28,986	7,298	167	20	207,866
New Mexico .....	1,340	26,773	6,415	630	24	74	35,256
Arizona .....	4,110	55,016	10,098	2,221	39	189	71,673
Utah .....	15,443	80,712	11,439	65	111	6	107,776
Nevada .....	943	13,542	3,135	14	28	54	17,716
<i>Mountain</i> .....	<i>44,308</i>	<i>484,322</i>	<i>92,017</i>	<i>12,101</i>	<i>674</i>	<i>367</i>	<i>633,789</i>
Washington .....	36,143	324,062	61,267	3,846	385	80	425,783
Oregon .....	16,388	179,082	34,603	3,029	240	105	233,447
California .....	86,548	1,487,797	258,407	32,195	4,312	138	1,869,397
<i>Pacific</i> .....	<i>139,079</i>	<i>1,990,941</i>	<i>354,277</i>	<i>39,070</i>	<i>4,937</i>	<i>323</i>	<i>2,528,627</i>

Note: \* For reconciliation of these figures with those of earlier years, see Table G (on page 15).



TABLE J  
NUMBER OF CUSTOMERS ADDED DURING 1931  
BY CLASS OF SERVICE

	Farm Service	Domestic Service	Commercial Small	Large	All Others	Total
<b>Total United States</b> .....	<b>48,867</b>	<b>92,276</b>	<b>12,653</b>	<b>(2,544)</b>	<b>1,952</b>	<b>153,204</b>
Maine.....	887	2,875	1,151	56	65	5,034
New Hampshire.....	870	1,142	313	(91)	39	2,273
Vermont.....	475	(2,706)	2,604	712	4	1,089
Massachusetts.....	201	11,436	1,198	(237)	205	12,803
Rhode Island.....	163	(32)	1,630	694	..	2,455
Connecticut.....	645	488	(40)	(43)	(3)	1,047
<i>New England</i> .....	<i>3,241</i>	<i>13,203</i>	<i>6,856</i>	<i>1,091</i>	<i>310</i>	<i>24,701</i>
New York.....	4,292	37,220	2,154	(307)	545	43,904
New Jersey.....	793	27,617	(656)	(1,651)	175	26,278
Pennsylvania.....	3,484	11,571	(765)	1,391	743	16,424
<i>Middle Atlantic</i> .....	<i>8,569</i>	<i>76,408</i>	<i>733</i>	<i>(567)</i>	<i>1,463</i>	<i>86,606</i>
Ohio.....	2,488	(13,982)	(612)	(459)	52	(12,513)
Indiana.....	1,603	(2,314)	505	375	(306)	(137)
Illinois.....	4,295	(17,193)	(1,395)	(694)	175	(14,812)
Michigan.....	4,361	(6,479)	(3,109)	470	(70)	(4,827)
Wisconsin.....	3,033	3,989	838	274	36	8,170
<i>East North Central</i> .....	<i>15,780</i>	<i>(35,979)</i>	<i>(3,773)</i>	<i>(34)</i>	<i>(113)</i>	<i>(24,119)</i>
Minnesota.....	1,085	1,165	634	1,175	5	4,064
Iowa.....	2,054	(1,916)	430	297	(222)	643
Missouri.....	1,998	(1,993)	(726)	(57)	54	(724)
North Dakota.....	123	195	85	58	3	464
South Dakota.....	194	(527)	(16)	(95)	(1)	(445)
Nebraska.....	970	99	398	148	5	1,620
Kansas.....	1,010	(675)	525	(173)	(40)	647
<i>West North Central</i> .....	<i>7,434</i>	<i>(3,652)</i>	<i>1,330</i>	<i>1,353</i>	<i>(196)</i>	<i>6,269</i>
Delaware.....	133	1,491	(515)	(98)	(18)	1,063
Maryland.....	347	5,390	76	(37)	(58)	5,718
District of Columbia.....	4	5,708	88	92	..	5,892
Virginia.....	1,867	3,328	492	(27)	24	5,684
West Virginia.....	416	4,144	488	(73)	74	5,049
North Carolina.....	633	858	316	35	66	1,908
South Carolina.....	253	564	11	(48)	(4)	776
Georgia.....	937	925	(1,149)	(15)	2	700
Florida.....	829	(180)	789	(41)	39	1,436
<i>South Atlantic</i> .....	<i>5,419</i>	<i>22,228</i>	<i>596</i>	<i>(142)</i>	<i>125</i>	<i>28,226</i>
Kentucky.....	901	120	385	67	24	1,497
Tennessee.....	411	(1,353)	1,614	(3,227)	23	(2,532)
Alabama.....	325	(3,719)	(1,338)	(143)	(31)	(4,906)
Mississippi.....	(73)	(946)	(568)	47	8	(1,532)
<i>East South Central</i> .....	<i>1,564</i>	<i>(5,898)</i>	<i>93</i>	<i>(3,256)</i>	<i>24</i>	<i>(7,473)</i>
Arkansas.....	51	(1,299)	(604)	(242)	(40)	(2,134)
Louisiana.....	229	1,980	403	(65)	39	2,586
Oklahoma.....	410	(4,755)	(816)	(618)	112	(5,667)
Texas.....	42	(2,746)	295	190	156	(2,063)
<i>West South Central</i> .....	<i>732</i>	<i>(6,820)</i>	<i>(722)</i>	<i>(735)</i>	<i>267</i>	<i>(7,278)</i>
Montana.....	185	481	154	(36)	4	788
Idaho.....	276	395	(129)	27	1	570
Wyoming.....	47	153	179	45	3	427
Colorado.....	413	(398)	287	(82)	10	230
New Mexico.....	98	(618)	95	(98)	2	(521)
Arizona.....	305	(513)	91	(51)	20	(148)
Utah.....	381	388	213	(65)	(6)	911
Nevada.....	67	135	104	..	2	308
<i>Mountain</i> .....	<i>1,772</i>	<i>23</i>	<i>994</i>	<i>(260)</i>	<i>36</i>	<i>2,565</i>
Washington.....	2,340	6,549	425	153	39	9,506
Oregon.....	621	(176)	33	142	16	636
California.....	1,395	26,390	6,088	(289)	(19)	33,565
<i>Pacific</i> .....	<i>4,356</i>	<i>32,763</i>	<i>6,546</i>	<i>6</i>	<i>36</i>	<i>43,707</i>

Note: Brackets ( ) denote net decrease during year.



